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Complete World's Survey of the Oil Industry — 15 Cents

The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

Published Every Thursday — TULSA, OKLAHOMA, DECEMBER 26, 1929 — $6.00 a Year

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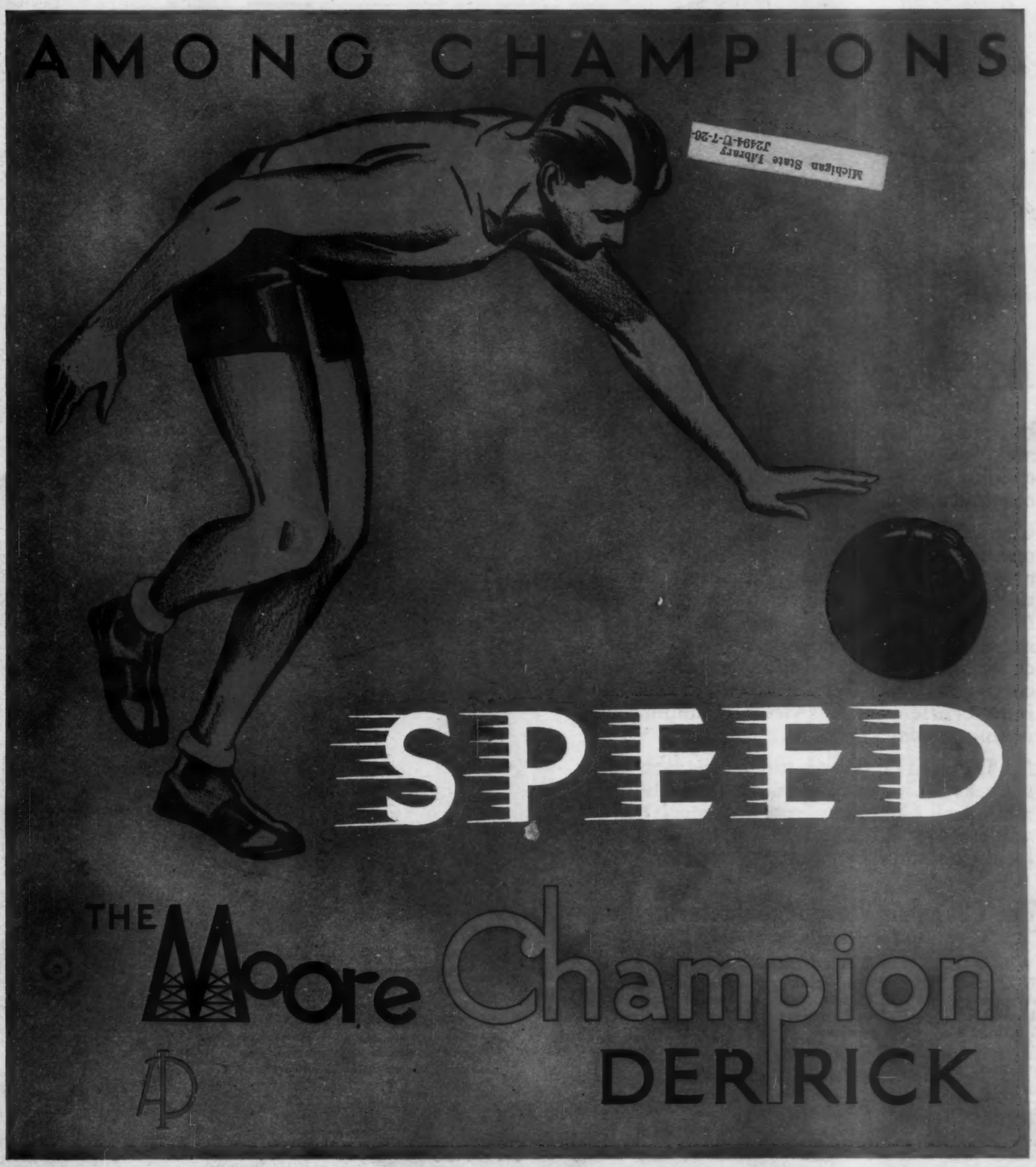

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CHAPMAN VALVES

NITRALLOY MOUNTED

Multiplying Valve Life

by many times former standards, NITRIDED seats and discs, supplied exclusively in Chapman Valves, are opening the eyes of engineers to new valve savings wherever hard service is a condition.

Until NITRALLOY entered the field, frequent opening and closing under heavily unbalanced pressures and high temperatures meant the quick death of ordinary valve mountings. But NITRALLOY has changed all that. It will not seize, gall, or wire-draw. It is unaffected by heat up to 1300 deg. It is practically corrosion proof. While extremely hard, it is not brittle. And it is virtually immune to ordinary wear.

NITRALLOY valve mountings are an exclusive Chapman product, now obtainable in all Chapman iron and steel body valves. For full details write us or your local Chapman distributor.

Every refinery engineer knows this "Chapman 600" Refinery Valve, with body of Chapman Chrome Nickel Steel (stronger than forged steel). It can now be obtained with NITRALLOY mounting and marks, we believe, the greatest advance in valve standards which modern design has achieved.

The Chapman Valve Manufacturing Co.
Indian Orchard, Mass.

Branch Offices

Houston	Philadelphia	Los Angeles
Atlanta	Chicago	New York
Detroit	San Francisco	Tulsa
Pittsburgh	Syracuse	Boston

Distributors
Wagner Supply Co., Fort Worth

LONG LIFE TO VALVES!

Walworth Gas Line Valve *without* By-Pass For 500 lbs. Working Gas Pressure.

WALWORTH DOUBLE DISC HIGH PRESSURE GAS LINE GATE VALVES

Walworth Gas Line Valve *with* By-Pass For 500 lbs. Working Gas Pressure.

A Complete Line

The 16" double disc valve with by-pass, gear operated, illustrated here, is a new Walworth Steeliron valve for gas lines —rated for 500 lbs. Working Gas Pressure.

From the small 2" iron body valve to the monster 24" gear operated valves, Walworth's iron body, double disc valve line is complete, with sizes and types for every purpose and pressure where iron body valves are practicable to use.

Within the past few years Walworth has developed lines of double disc iron body gates especially for the oil industry, but also suitable for other service.

The double disc, parallel seat action of these valves is quick and positive, reducing leakage problems to a minimum and assuring long, reliable service. Including the 700-lb. test line, these valves for the higher pressures are made of Steeliron; and all lines, including the standard weight valves, are bronze mounted, with bronze stems.

Pressure ratings are as follows:

Standard	175 lbs. Cold Oil, Water or Gas
700 lb. Test	400 lbs. Cold Oil, Water or Gas
1000 lb. Test	500 lbs. Cold Oil, Water or Gas
1600 lb. Test	800 lbs. Cold Oil, Water or Gas
Gas Line Valve	500 lbs. Working Gas Pressure

NOTE—Gas Line Valves for higher than 500 lbs. Working Gas Pressure are made of Walworth Sigma Steel.

WALWORTH

Walworth Company, General Sales Offices: 51 East 42nd St., New York
Plants at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa.; and Attalla, Ala.

Distributors in Principal Cities of the World
Walworth Company Limited, 620 Cathcart St., Montreal, P. Q.
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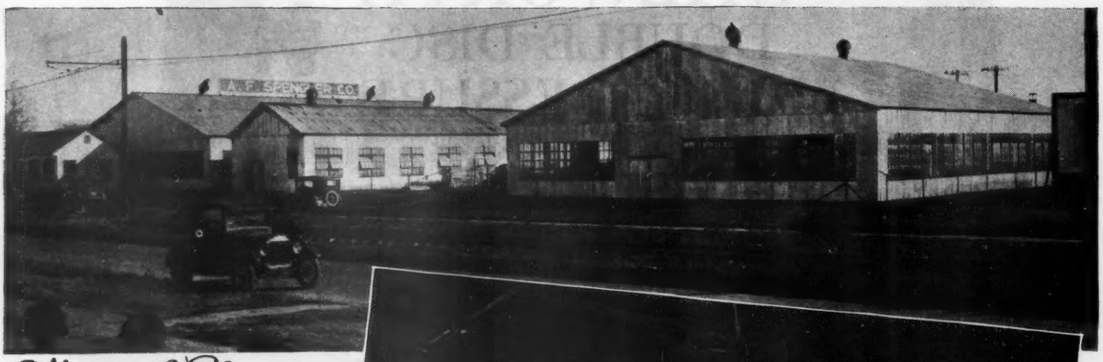
The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Okla., under the Act of March 3, 1879.

SPENGLER'S
HEAT TREATED ALLOY-STEEL
TOOL JOINT



View of Plant

Interior View of TOOL JOINT *Department*

.... serving the Mid-Continent

WE provide the Mid-Continent with Spengler's Heat Treated Alloy-Steel Tool Joint, which is daily winning increased recognition throughout the oil country. This tool joint complies with A.P.I. specifications, has the high tensile strength, as well as meeting special requirements for drilling in the Oklahoma City and other deep areas.

Our plant is the most modern and complete of its kind in the southwest. We assure immediate delivery on all of our products. Your inquiry is invited.

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OKLAHOMA CITY, OKLA.

A book that will help you solve 95% of all bearing problems

The Eagle Bearing Service, as a result of its work in studying and meeting the bearing needs of many industries, has scientifically designed three bearing metals to meet 95% of all bearing requirements.

These three metals, with their properties and uses, are described in a free book recently issued. We believe every bearing metal user will find this book interesting and useful. Mail the coupon for a free copy.

These three bearing metals have enabled large and small concerns to standardize, not only insuring the smooth running of plants, but also effecting definite savings.

Mail the coupon below. *The Eagle-Picher Lead Company, Chicago, Joplin, Cincinnati.*

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Please send me, without obligation, your free Eagle Bearing Metal Book.

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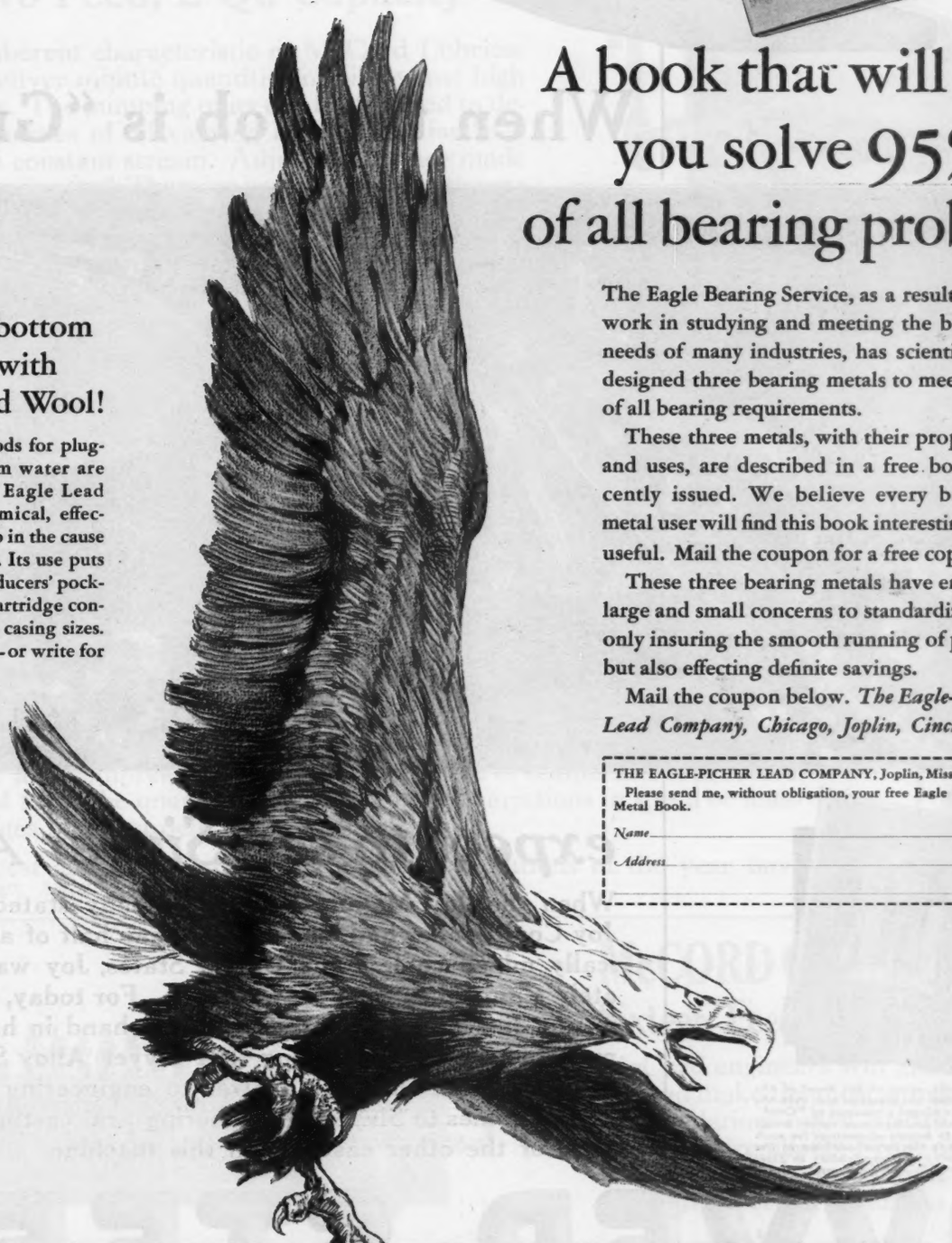
Shut off bottom water with Eagle Lead Wool!

All other methods for plugging off bottom water are old fashioned. Eagle Lead Wool is economical, effective—a real help in the cause of conservation. Its use puts dollars into producers' pockets. Sold with cartridge containers to fit all casing sizes. At your dealer—or write for free folder.



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Reg. U.S. Pat. Off.

1 *Eagle Dreadnaught High-Speed Bearing Metal*—for extreme speed and heavy pressure conditions.

2 *Eagle Outlasta General Service Bearing Metal*—for average speed and pressure conditions.

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Built with Steel Castings

When the Job is "Grief"

The gathering arms at the front of the machine gather the loosened coal into the loader. They absorb a measure of "Grief" that ordinary castings may never know. Of interest to buyers of castings for such jobs as this is the latest addition to the Sivyer Library: "Dependability in Steel Castings." Ask for a copy.

expect to see Sivyer Alloy

When the Joy Manufacturing Company stated that the Joy Coal Loader had loaded more than half of all mechanically mined coal in the United States, Joy was immediately stamped as a Sivyer customer. For today, leadership in any line and goodness tend to go hand in hand. And manufacturers are learning that Sivyer Alloy Steel Castings are often the only answer to engineering problems. So Joy comes to Sivyer for gathering arm castings and for 80% of the other castings on this machine.

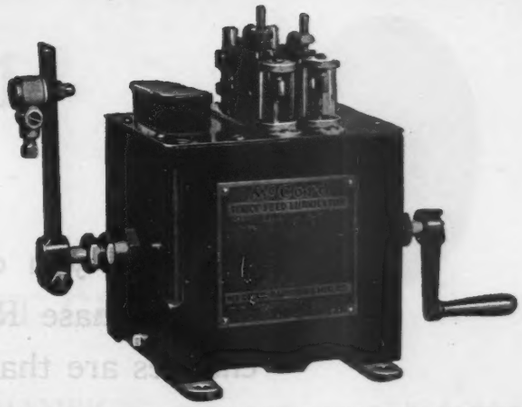
SIVYER STEEL

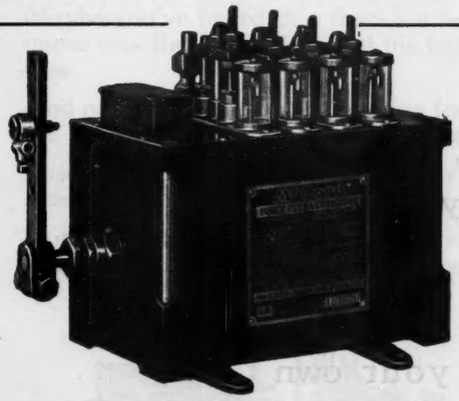
SIVYER STEEL CASTING COMPANY, MILWAUKEE

McCORD FORCE FEED LUBRICATORS

McCORD CLASS "LD"—
Two Feed, 2 Qt. Capacity

It's an inherent characteristic of McCord Lubricators to deliver minute quantities of oil against high pressures. The pumping units can be adjusted to deliver quantities of oil varying from a fraction of a drop to a constant stream. Adjustments once made remain unchanged. They are not affected by extreme temperature changes. They deliver the same quantity of oil regardless of viscosity.





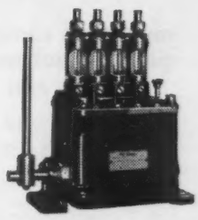
McCORD CLASS "LD"—
Four Feed, 1 Gal. Capacity

A McCord Lubricator is the only one of its kind that shows the oil actually being delivered to the cylinder or part being lubricated. Another safeguard that makes for dependable service is that undetected leakage is impossible. The construction of McCord Lubricators makes immediately evident any leaks since oil will accumulate on top of the reservoir.

McCORD CLASS "LF"—MECHANICAL LUBRICATORS

A McCord Class "LF" Mechanical Lubricator installed on your pipe line engines assures uninterrupted and absolutely uniform delivery of oil to power and compressor cylinders irrespective of temperature, pressure, or rate of feed; the quantity varying only with variations in speed or manual changes in adjustment.

The largest and most outstanding engine installations of the year have been 100% McCord equipped.



McCORD CLASS "LD"—
Sixteen Feed, 3 Gal. Capacity

McCord engineers will gladly co-operate and make the most satisfactory recommendations upon submission of your requirements. From one of these McCord Lubricators a unit can be selected to meet any condition or service.

McCORD RADIATOR & MFG. CO.
LUBRICATOR DIVISION
Detroit Michigan

Have you considered the application of Vapor Phase Refining in your plant? The chances are that you too will find it possible to

Increase your gasoline yields,
Improve your gasoline quality, and
Cut your refining costs.

We will be glad to go over your own conditions with you and show you how.

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NEWARK, NEW JERSEY

NYE TOOLS FOR SALE BY ALL LEADING SUPPLY HOUSES

A LETTER FROM HARRY G. NYE

TO THE OIL MEN OF THE U. S. A.

"THE NEW LIGHTWEIGHT CHAMPION"

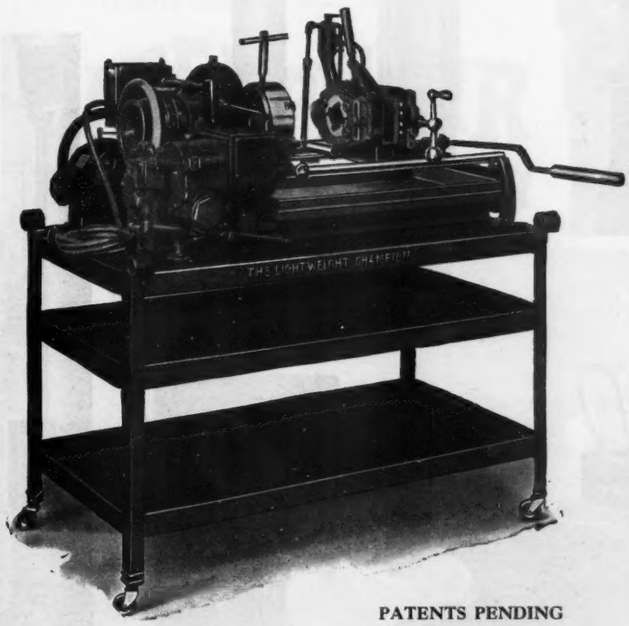
FELLOW CITIZENS:

Maybe you've heard that there's a new "LIGHTWEIGHT CHAMPION", and maybe you thought his name was Battling Riley, and his father's name Confetti Ravioli, or something like that, as is so often the case.

And perhaps you thought he came from Philadelphia, where all the fighters come from, just the same as all the actors come from New York whether they have ever been in New York or not.

Possibly you pictured a smallish gentleman with corrugated ears, one partly detached, a mashed nose, either mashed or boiled, and a mouth that looked like it had been kissed by a pile-driver.

Nothing of the kind. The new "LIGHTWEIGHT CHAMPION" was foaled—or whatever it is that happens to a champion at a time like that—right here at The Nye Tool & Machine Works in Chicago.



PATENTS PENDING

"THE LIGHTWEIGHT CHAMPION"

POWER PIPE THREADING MACHINE
THREADS, CUTS OFF AND REAMS
CAPACITY ½ TO 2 INCHES

It is the New Nye No. 50 portable pipe machine, and it is the champion of all lightweight power pipe machines now on the market, or that ever were, or that ever will be.

It has a wallop that will cut and thread two inches of the darndest, cussedest, meanest pipe in the world, and yet it will treat a half-inch brass pipe with kindness and consideration.

It is one of the few lightweight champions that ever saved any money; but it certainly does that for any shop that has one (or more) to send out on a job.

How fast will it cut pipe? How fast will any other portable pipe machine cut it? Well, faster than that. It has the power, the speed and the mechanical features to do it.

When these lightweight machines came out, you knew right away who would make the best one, of course. If you're going to get one, and of course you are, why not get the champion?

Sincerely yours,

HARRY G. NYE

Otherwise Known As

The Nye Tool & Machine Works

4120-30 Fullerton Avenue Chicago, Ill.

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NYE TOOLS FOR SALE BY ALL LEADING SUPPLY HOUSES

SOME ROTARY TOOLS

By

HONEST TOOLS

HINDERLITER

ROTARY STANDARD CABLE

"Caterpillar" Tractors the world over

THIS "Caterpillar" Twenty happens to be helping set up a drilling machine in the Pennsylvania oil fields—other "Caterpillars" are hauling pipe in Venezuela—turning under dry grass on the property of a California refinery—pulling rods on a Texas well—raising a derrick in Roumania—building steel tanks in Montreal—hauling, pulling, lifting, pushing. Work done better, quicker, cheaper. Once the oil man is equipped with a "Caterpillar" track-type Tractor he finds some big jobs for it to do—and a lot of little ones where costs are cut and profits fattened!

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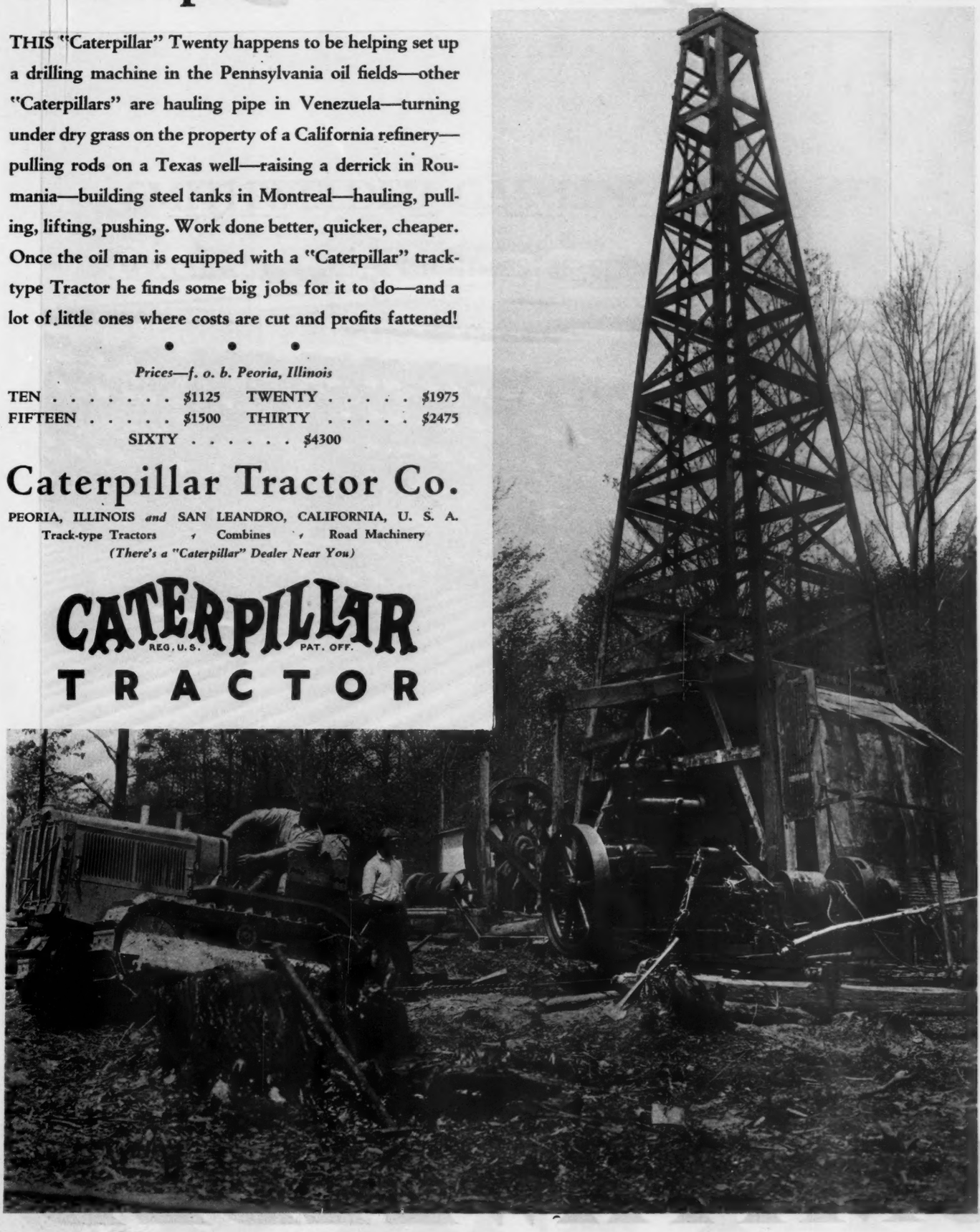
Prices—f. o. b. Peoria, Illinois

TEN	$1125	TWENTY	$1975
FIFTEEN	$1500	THIRTY	$2475
		SIXTY	$4300

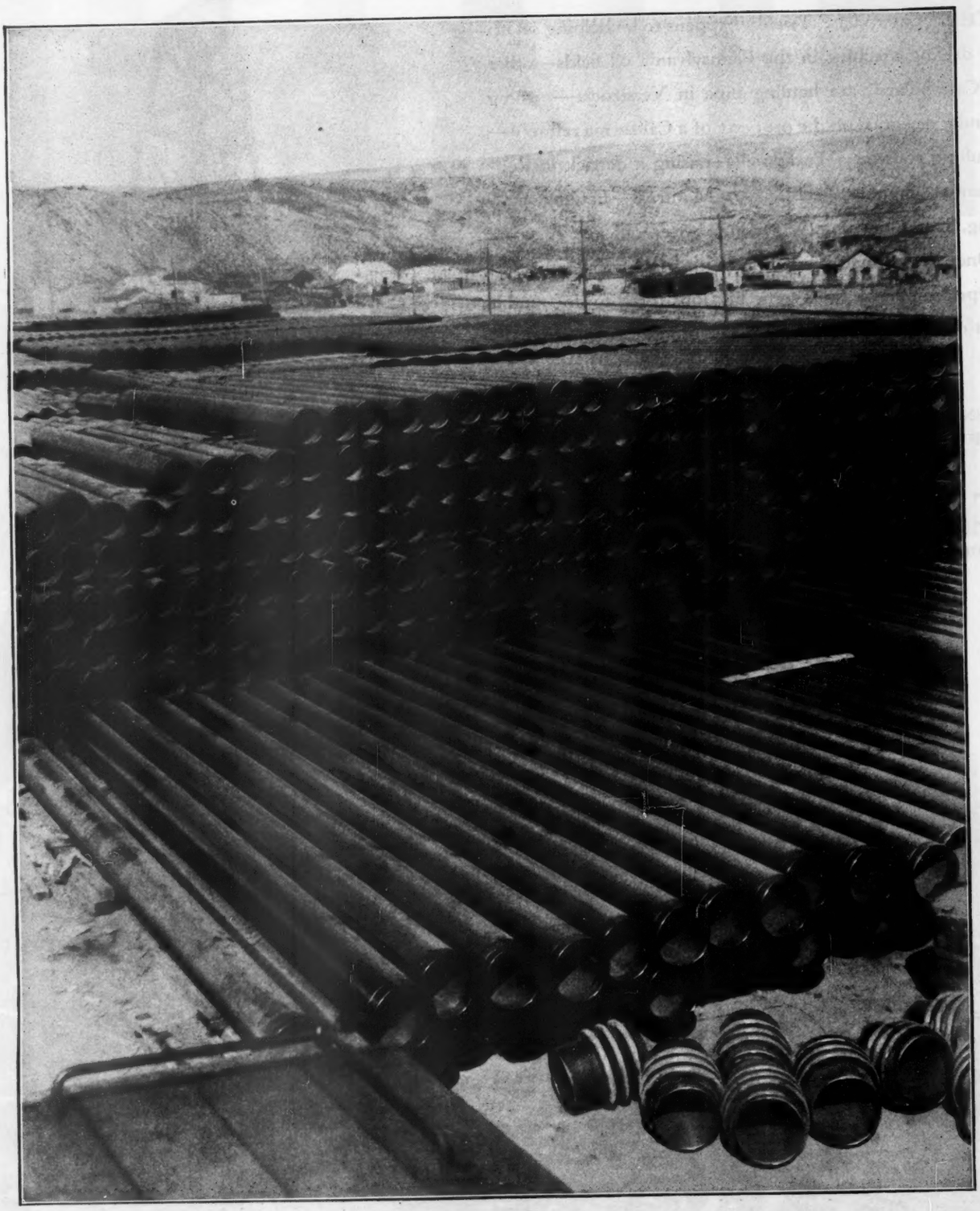
Caterpillar Tractor Co.

PEORIA, ILLINOIS *and* SAN LEANDRO, CALIFORNIA, U. S. A.
Track-type Tractors ' Combines ' Road Machinery
(There's a "Caterpillar" Dealer Near You)

CATERPILLAR
REG. U. S. PAT. OFF.
TRACTOR



Lest you Forget—



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for 1930 Programs

SMITHWELDED GAS LINE PIPE

Accurate Wall Thickness as specified

Uniform Lengths of 30 or 40 feet

Uniform Roundness—Uniform Straightness

Ends True and Square to Pipe Axis

SMITHWeld Bell and Spigot Joints

SMITHWeld Steel Expansion Joints

$8\frac{5}{8}$ to 26 inches in diameter

Production 25 miles per day

Faster Pipe Line Construction

More Economical Line Construction

Earnings Sooner—Profits Greater.

A. O. SMITH CORPORATION

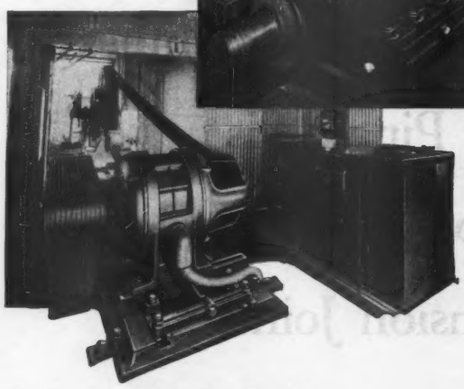
OIL AND GAS FIELDS PRODUCTS DIVISION

General Offices: Milwaukee, Wisconsin *District Offices:* New York · Tulsa · Los Angeles · Houston

GAS LINE PIPE

It takes good machines to satisfy the oil industry — these are doing it

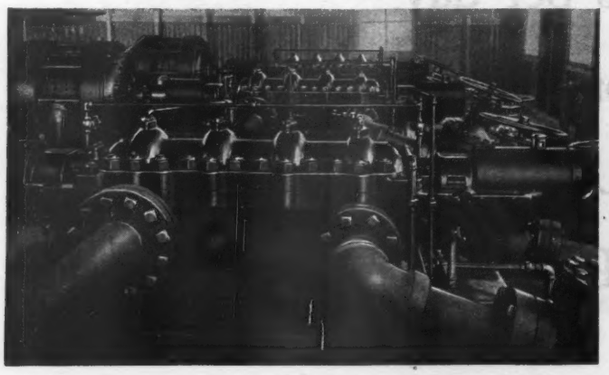
200 h.p., Type "ANY" Slip Ring Motor and Texrope Drive operating Slush Pumps.



150 h.p. "ANY" Motor driving Draw Works and Table through Texrope Driven Single Reduction Unit.

Texrope Driven Single Reduction Unit with Allis-Chalmers Motor and Control, arranged for Cable Tool Drilling.

25,000 Bbl. per day Type "M" Centrifugal Pipe Line Pumps driven by 225 h.p. Allis-Chalmers Motors.



It is in the oil fields that quality machinery shows its real worth. There is less time out for repairs or adjustments and fewer delays for getting new parts. A little extra care taken in the building of a motor or pump at the factory often saves trouble in the field.

Allis-Chalmers has always tried to build good machinery. Whether it is a 100,000-k.w. steam turbine and alternator unit or a 15-h.p. motor or Texrope Drive, each is built with enough reserve power to carry the heaviest loads.

There is an Allis-Chalmers motor and control for every oil field job, two-speed motors for pumping and drilling, special drilling motors with enclosed slip-rings and drip proof housings, totally enclosed fan-cooled motors for exposed locations, and standard, general purpose motors for driving pumps, compressors, etc.

The positive and flexible, short center, Texrope Drive is popular in all branches of the oil industry. It is used with Allis-Chalmers single and double reduction units, for operating slush pumps, pipe line pumps, compressors, and for driving many other types of oil field equipment.

Allis-Chalmers centrifugal pumps are built for a wide variety of heads and capacities. Pipe line pumps are built in both centrifugal and plunger types. Gas engine driven compressors are suitable for use in booster stations on gas lines.

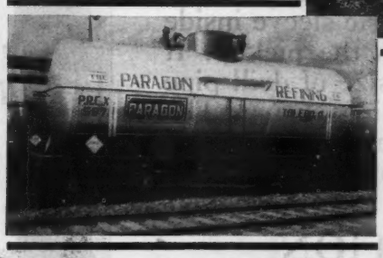
This is some of the equipment that Allis-Chalmers, as manufacturers of power, electrical and industrial machinery, builds for the petroleum industry. Write for bulletins.

ALLIS-CHALMERS MFG. CO.
MILWAUKEE, WIS.
Sales Offices in all Principal Cities

ALLIS-CHALMERS

A PROTECTIVE COATING
that also conserves

Skelly Oil Company Refinery, El Dorado, Texas. The entire farm is covered with Aluminum-Painted tanks.



Tank car of the Paragon Refining Company of Toledo, O. Because they are subjected to the severest weather and the most exacting service conditions, tank cars are in special need of the "coat-of-metal" protection Aluminum Paint insures.

THE general acceptance of Aluminum Paint as the most effective covering for oil tanks has behind it very real reasons.

Aluminum Paint possesses the unique property of "leafing." When applied to a surface the small flake-like particles of pure Aluminum overlap like falling leaves, forming a tough durable surface, that is highly resistant to corrosion and not easily discolored.

This surface, bright and smooth, reflects the sun's rays instead of absorbing them—keeps the oil cool—prevents loss by evaporation.

Aluminum Paint also serves as a protection against the highly destructive fumes of hydrogen sulphide.

Send for a copy of the booklet, "Aluminum Paint, the Coat-of-Metal Protection." It is a true story of practical painting economy.

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Offices in 19 Principal American Cities

ALBRON

The pigment base for the better grades of Aluminum Paint is ALBRON made of pure ALCOA Aluminum. For extra durability and complete opacity be sure to specify ALBRON pigment.

ALUMINUM PAINT
"IT LEAFS"

FISHING TOOLS
DRILLING TOOLS

AMERICAN IRON & MACHINE WORKS CO. · OKLAHOMA CITY ·

AMERICAN
MILLING SHOES

Interchangeable with Standard Guide

TYPE "D"

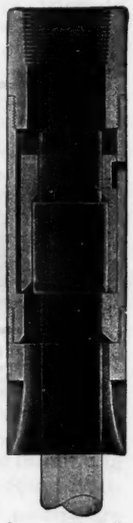
TYPE "E"

TYPE "F"

ANNOUNCING A NEW FISHING TOOL

The American Iron & Machine Works Company are offering the Oil Industry a new Overshot — The American Eccentric Releasing Overshot (see illustration at right). This tool operates without springs, dogs, or slips, using an eccentric sleeve inside the body that makes the pickup. It can be used on any size of drill pipe by using corresponding sleeve. The Guide is removable and interchangeable with the American Milling Shoes or Wall Hook.

AMERICAN ECCENTRIC RELEASING OVERSHOT



OPERATION

To catch, get the overshot down over the tool joint or coupling snugly, then turn with the tongs one-half turn to the right. The sleeve will engage either the tool joint or coupling.

To release let pipe down slowly turning fishing string to the left with tongs.

Look over the American Tools listed below. They are carried by leading supply companies. Descriptive folder on any tool listed below sent on request.

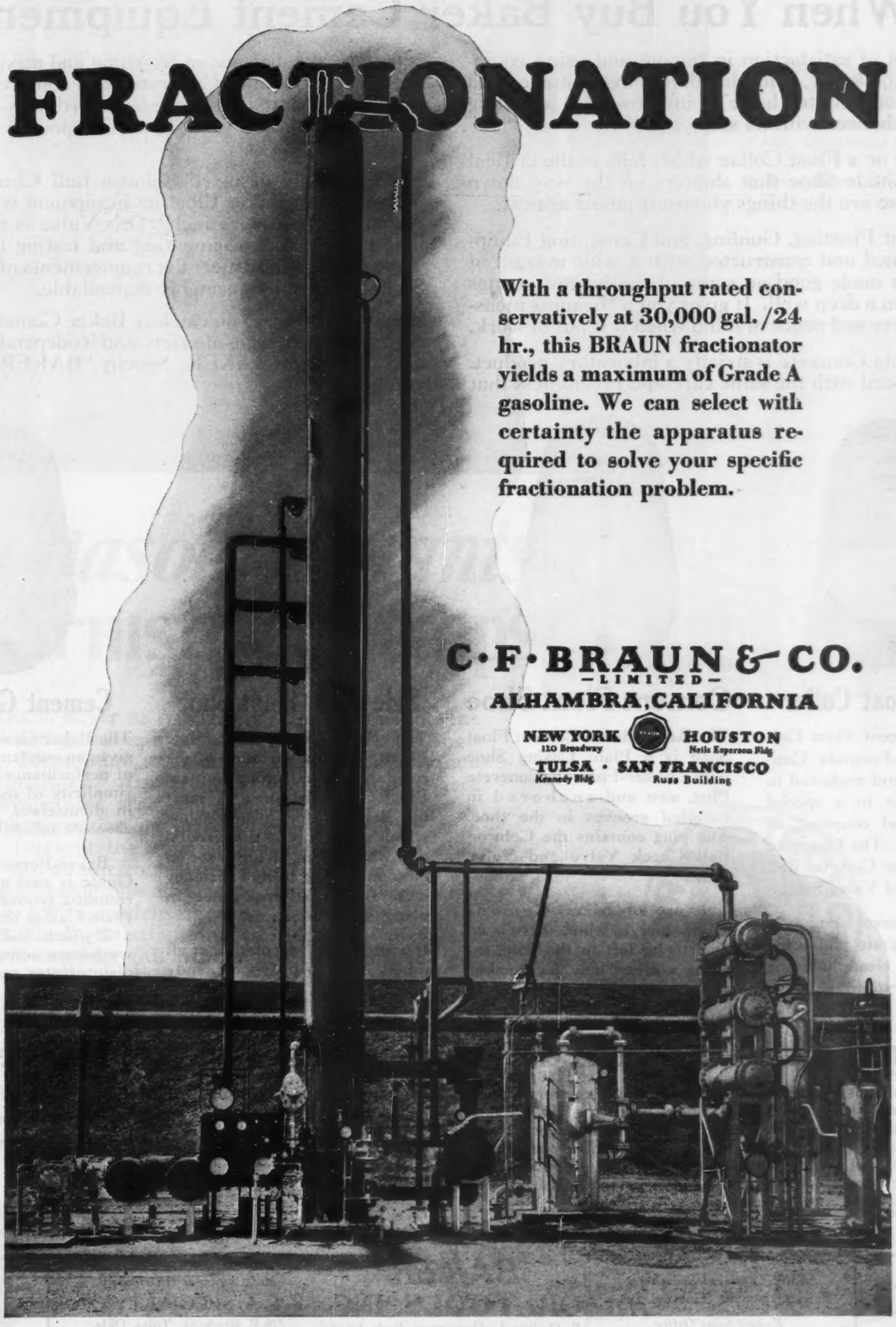
AMERICAN IRON and MACHINE WORKS CO.
Manufacturers of Oil Field Equipment
OKLAHOMA CITY, OKLAHOMA

AMERICAN OIL FIELD EQUIPMENT

For Sale By The Leading Supply Companies

American Releasing and Circulating Overshots
American Rock Bit Wrenches
American Milling Shoes
American Flexible Coupling for Rock Bit Lubricators
American Steel Tool Houses
American Steel Tool Boxes
American Forged Steel Wall Hooks
American Rock Bit Breakout Blocks
American Paraffin Bits
American Forged Steel Drill Collars
American Female Die Nipples
American Tapered Taps
American Forged Steel Subs
American Rotary Shoes
American Cone Fishing Baskets
American Steam Lubricators
American Side Tracking Mills
American Combination Reverse and Throttle Levers
American Steel Engine Foundations
American Automatic Cat Head
American Automatic Cathead Control Levers
American Rotary Milling Tools
American Myracle Sucker Rod Sockets
American Surface Bit Blades for Rock Bits
American Drill Pipe Float Joints
American Pump Manifold Check Valves
American Eccentric Releasing Overshot
American Casing Suspension and Blowout Preventer
American Lead Plug
American Rock Bit Cone Fishing Sockets
American Steel Whipstocks
American Inside Pipe Cutter for Drill Pipe or Casing
American Adjustable Steel Rig Braces
American Fish Tail Bits

FRACTIONATION



With a throughput rated conservatively at 30,000 gal./24 hr., this BRAUN fractionator yields a maximum of Grade A gasoline. We can select with certainty the apparatus required to solve your specific fractionation problem.

C·F·BRAUN & CO.
—LIMITED—
ALHAMBRA, CALIFORNIA
NEW YORK 120 Broadway · HOUSTON Neils Esperson Bldg
TULSA Kennedy Bldg · SAN FRANCISCO Russ Building

You Buy A "Heaping Measureful" of Value and Safety When You Buy Baker Cement Equipment

There is a lot of satisfaction in buying and using equipment which you know, beforehand, is going to make good on the job. You have too large an investment in a drilling well to take chances with its safety.

A Float Shoe or a Float Collar which fails at the critical moment—a Guide Shoe that shatters on the way down the well—these are the things you must guard against.

Baker Cement Floating, Guiding, and Cementing Equipment is designed and constructed with a wide margin of safety. It has made good on some of the longest strings ever sent down a deep well. It gives you a "heaping measureful" of safety and peace of mind when it is put to work.

Baker-Formula Concrete is strictly a laboratory product. It is compounded with the same care and preciseness that is used by the druggist in weighing and mixing a prescription. Baker-Formula Concrete has a compressive strength of 6002 pounds to the square inch. Ordinary good concrete has a strength of only 2800 to 3700 pounds to the square inch.

The especially designed Celoron Ball Check Valve and Valve Seat in Baker Floating Equipment will test to 5500 pounds to the square inch. This Valve is the result of a long period of experimenting and testing to arrive at a valve which would meet the requirements of Baker Safety Standards. It is thoroughly dependable.

Remember this: You can buy Baker Cement Equipment, with its wide margin of safety and its dependable performance, only from BAKER. Specify "BAKER" and see that you get it.

Cement Float Collar

The Baker Cement Float Collar is a Baker-Formula Concrete plug cast and anchored in rounded grooves in a special seamless steel coupling, 20 inches in length. The Concrete Plug contains the Celoron Ball Check Valve and Valve Seat.

Both the Concrete and the Celoron disintegrate under the drill, leaving a clean hole for subsequent operations.

Cement Float Shoe

The Baker-Burch Cement Float Shoe is a Plain Casing Shoe with a Baker-Formula Concrete Plug, cast and anchored in rounded grooves in the shoe. The plug contains the Celoron Ball Check Valve and Valve Seat.

The use of Baker Cement Equipment, in which there is no iron to be left in the hole, insures a clean hole for further operations, where necessary.

Side Hole Float Shoe

The Baker-Burch Side Hole Float Shoe is a variation of the regular Baker-Burch Cement Float Shoe, designed to meet the demand for a float shoe which will not plug the circulation when a long string is set on bottom. Owing to its efficiency it is given the preference in many operating areas.

It assures free circulation at all times, even in heavy or sandy mud.

Cement Guide Shoe

The Baker Cement Guide Shoe gives an outstanding superiority of performance and has a basic simplicity of design which are, in themselves, a guarantee of absolute reliability.

A Baker-Formula Concrete Guide is cast and anchored in rounded grooves in a standard Plain Casing Shoe, usually with a 2½-inch hole for a strong washdown action. The concrete disintegrates readily under the bit.

Complete Line of Baker Cement Equipment is Protected by Patents

It is only natural that the many vital safety features incorporated in Baker Cement Floating, Guiding, and Cementing Equipment should be protected by Patents. Baker Cement Equipment represents values created by the Baker Organization which are far in excess of the nominal prices placed upon the various items in the line. It represents an untold amount of engineering research, experiment, field testing, and perfecting.

You have a huge investment in your drilling well. You know, only too well, what a disaster could do to that investment. The sure way to protect that investment, and to make every floating, guiding, or cementing operation absolutely safe, is to specify and see that you get Baker Cement Equipment.

Detailed Information Will Be Mailed on Request

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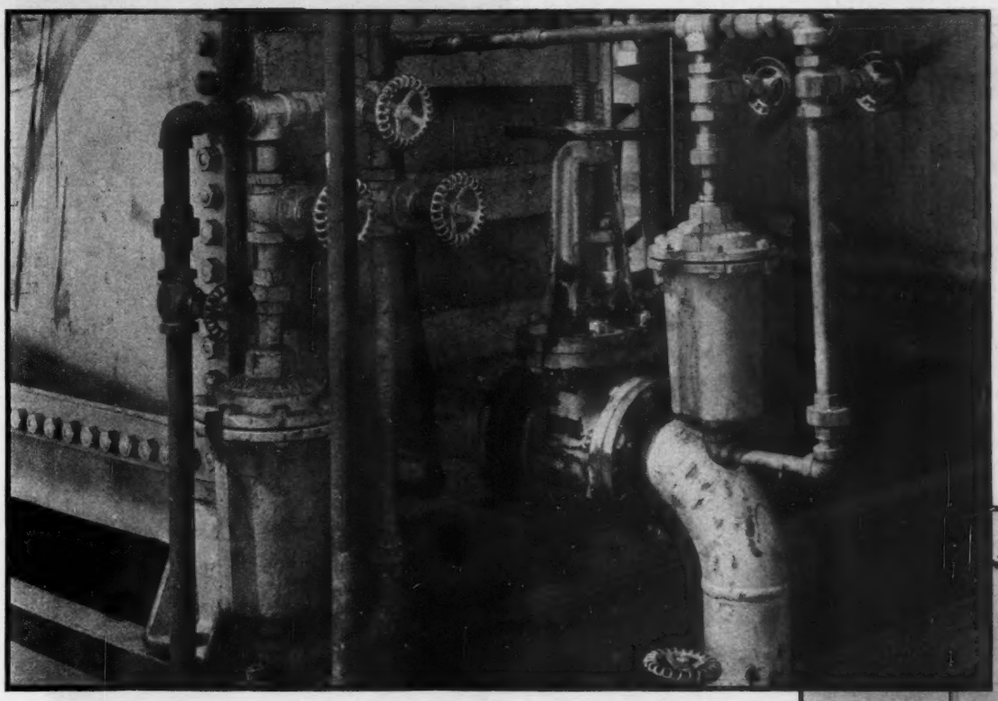
220 E. Brady St., Tulsa, Okla.
2301 Commerce St., Houston, Tex.

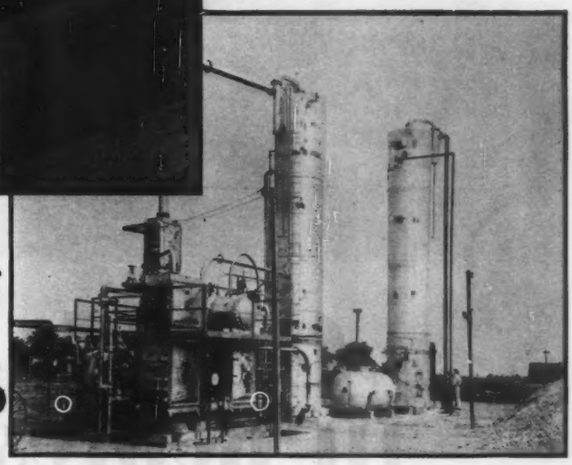
Don't Use Cast-Iron Equipment — Cement is Stronger and Better

Stocks carried by Dealers in all active Mid-Continent fields.



At left: Close-up of Armstrong Traps on pump line and reflux unit, Coline Gasoline Corp., Oklahoma City, Okla.

Below: View of plant.



Why gasoline plants use Armstrong traps

A LARGE buyer of Armstrong Traps for use in the oil and gasoline industry is the Southwest Engineering Corporation, builders of the natural gasoline plant illustrated. Armstrong Traps are installed here at the evaporator, receiving tank and steam preheater. Since the absorption and distillation operations are automatic in this unit, the traps used must be highly dependable as well as efficient. Armstrong traps provide these features by being non air-binding; they discharge scum and sludge with condensate; are self scrubbing; and require practically no attention. In addition, they are small and compact (all working parts are inside) yet they have large capacity. As the picture shows, they are supported by the connecting pipes.

Our faith in Armstrong trap performance has been proved by so many installations in oil fields that we extend to you the privilege of a 90-day free test on your own equipment. Send the coupon for as many as you require.

ARMSTRONG MACHINE WORKS
368 Maple Street, Three Rivers, Michigan
District Representatives in 42 Cities

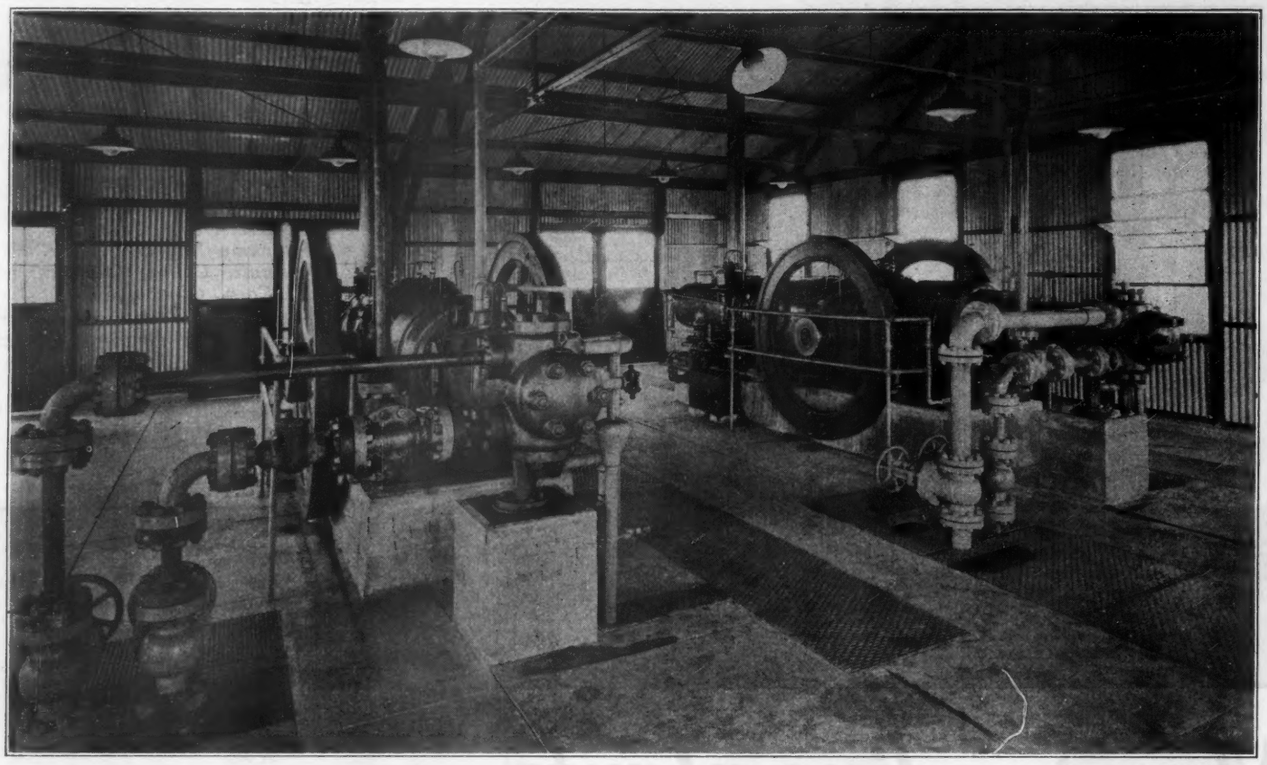
Note the small size and simplicity of the Armstrong Trap. Thousands are in use in the oil industry.

ARMSTRONG · TRADE MARK · "INVERTED BUCKET" STEAM TRAP

To _____ (Name) _____ (Firm)
_____ (Position) _____ (City) _____ (State)
_____ (Street)
For _____ (Size and make of machine)
Size of Pipe _____ Steam Pressure (Max.) _____
☐ *Send Catalog* *from*
ARMSTRONG MACHINE WORKS
368 Maple Street Three Rivers, Mich.

Fill in and Mail For 90 Day Test

OGJ 12-26 Gray



Clark "Super 2's" in Repressuring Service

(2,500 lb. *pressure*)

The above photograph shows a Humble Oil & Refining Co. repressuring plant at Sugarland, Texas, with two 95 H.P. CLARK Super-2 Compressors arranged to deliver 2500 pounds pressure.

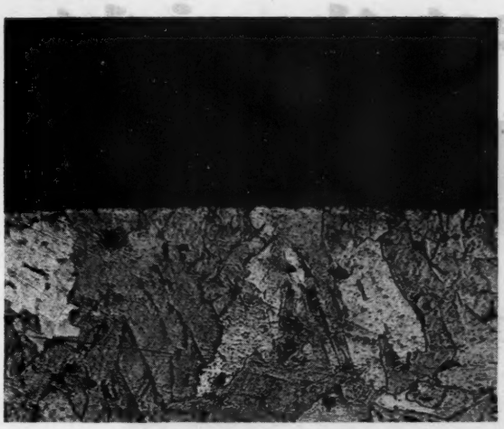
Because of better mixing of air and gas, higher turbulence, and elimination of loss of gas into exhaust, CLARK "Super 2s" operate on 1/3 less gas than the ordinary 2-cycle machines. Because of the perfected design and staunch construction which Clark Bros. Company puts into these machines as a result of 50 years engine building experience, CLARK "Super 2s" operate with the very minimum amount of trouble.

Made in 95 H.P. Single and 180 H.P. Twin types—also in 200 H.P. and 400 H.P. Double-Acting Engine types.

Clark Bros. Company, Olean, N.Y. *Export Office:* 150 Broadway, New York City. *Mid-Continent Sales Offices:* Tulsa and Fort Worth. *Warehouses:* Tulsa, Okla.; McCamey and Sweetwater, Texas; Artesia, N.M. *California:* Smith, Booth, Usher Co., 228 S. Central Ave., Los Angeles.

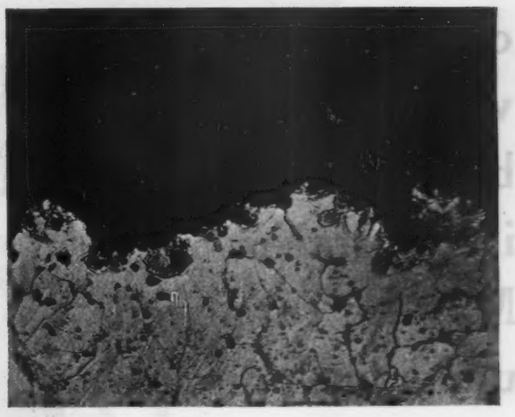
Compressors and Gas Engines

CLARK



Unretouched micro-photograph showing cross section of the shell of new steel pipe line.

Why let corrosion undermine your pipe line investment?



Destructive effect of corrosion on unprotected pipe after it has been in the ground. Photographs enlarged 250 times.

Every pipe line operator recognizes the ever-present threat of corrosion. Soil conditions vary, of course, but once the pipe is in the ground, corrosion is almost inevitable. Sooner or later it will take its toll in expensive reconditioning operations and the loss of revenue while the line is out of service.

Fortunately, it is possible to obtain satisfactory pipe line protection at low cost.

Far-sighted line operators today are successfully combatting corrosion by specifying Biturine Coatings for their new lines and for old ones that are being reconditioned.

Biturine Coatings were developed by the laboratories and engineers of Hill, Hubbell & Company, an organization which for twenty-three years has specialized in the study of the problems of protecting metal surfaces from corrosion.

The engineering staffs of the largest line operators in the country have put the seal of approval on Biturine Coatings. For Biturine has met not only the most severe competitive tests, but has made an outstanding record in actual service over a period of years on thousands of miles of pipe.

***INHIBURINE**

This entirely new inhibitor with extraordinary anti-corrosive powers is now being incorporated into Biturine Primer whenever specified. Being solvent in Bitumens it becomes an integral part of the priming coat and thereby functions as a second line of defense against corrosion should the Biturine Enamel coating be penetrated.

BITURINE COATINGS

Biturine Enamel — Biturine Enamel Primer*

Biturine Coupling Solution

Biturine Solution No. 5 — Biturine 70-30

Biturine Enamel Primer can be obtained with Inhiburine

FOR NEW LINES

Investigate the most important development in the history of pipe line protection—the exclusive Hill, Hubbell & Company process of mechanically coating and wrapping pipe *at the mill.*

This process is now available for the production of six leading pipe mills. Biturine Coatings are particularly adapted for use with this process but specifications are available covering a wide range of combinations and materials.

Write to our nearest office for complete information regarding Biturine Coatings and mechanically coated and wrapped pipe.

GENERAL PAINT CORPORATION

HILL, HUBBELL & COMPANY DIVISION

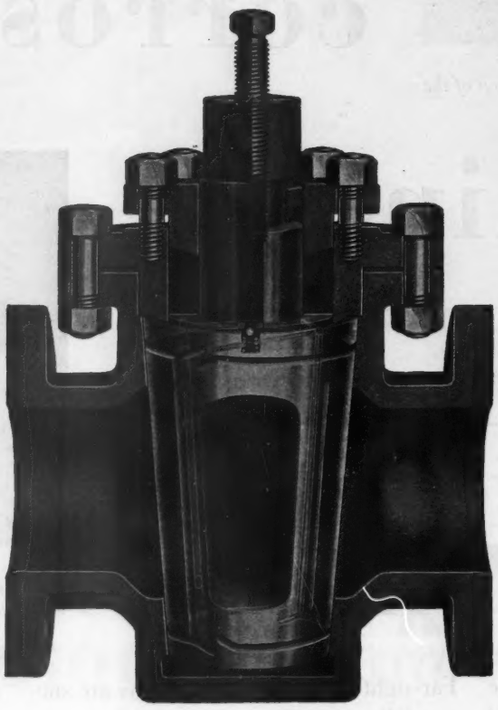
CHICAGO NEW YORK TULSA HOUSTON DALLAS SAN FRANCISCO OAKLAND
LOS ANGELES PORTLAND SEATTLE SPOKANE

It's important to select the right

VALVES

Note the construction of Barco Plug Valves

Completely lubricated without waste. Use a lubricant on wearing surfaces only. May be repacked under line pressure without danger.



The finest adjustment is provided without unnecessary friction or extra parts by adjusting the packing gland. Barco Valves are tight without the aid of the lubricant.

Barco Valves don't leak, last long and require little maintenance. Send for catalog.

Barco Manufacturing Company

1801 Winnemac Avenue, Chicago, Illinois

Agents:

Vinson-Canter Co., Tulsa, Oklahoma
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Herbert Wolcott, El Paso, Texas
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BARCO

Valves and Joints

O&GJ 12-12 Gray

A large installation of CP Gas Engine Driven Vertical Gas Compressors in the Seminole Field

ECONOMICAL
in SPACE—in OPERATION

FOR compressor service of all kinds this compact, self-contained, high capacity Diesel or gas engine driven compressor fills every requirement. A large variety of interchangeable cylinder sizes can be supplied, adapting it to widely varying conditions or to work of an experimental nature such as encountered with the flowing of wells by compressed gas.

CP Compressors of this type are available with a capacity range from 49 to 578 cu. ft. per minute and pressures from 60 to 1000 pounds per square inch. Fully illustrated and described in Bulletin 798 sent on request.

Chicago Pneumatic Tool Co.

6 East 44th Street, NEW YORK, N. Y.

Sales and Service Branches all over the World

Whealton & Townsend Co., Inc., *Authorized Distributors*

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C-290

CHICAGO PNEUMATIC

COMPRESSORS

Accuracy of Orifice Measurement *established* 4163 Years Ago

TABLETS of stone, previous to 2234 B.C., tell how Chaldean astronomers used the ORIFICE principle so accurately that their computations of the synodic and periodic months fell short of our modern time by *less than five seconds.*

The Chaldeans' method was simple. By comparing the quantity of water discharged through an *orifice* during the time occupied by the sun crossing the horizon the morning of the equinox, with the amount discharged through the same *orifice* at the next sunrise, they discovered that the amount discharged between the two risings of the sun was 720 times the amount discharged during sunrise on the equinoctial morning. They thus inferred that the sun's orbit measured 720 times its disc, and from that they derived a unit to measure space and *time.* Today, 1929 A. D., Metric *Orifice* Meters set the standard of accuracy in oil and gas measuring. Use of the time-honored *orifice* principle alone is not the reason; 38 years of meter-making experience, good materials, expert workmanship, and always-available service from the largest manufacturer of orifice type meters insure dependable, economical measuring. *Write for Bulletin No. E-2.*

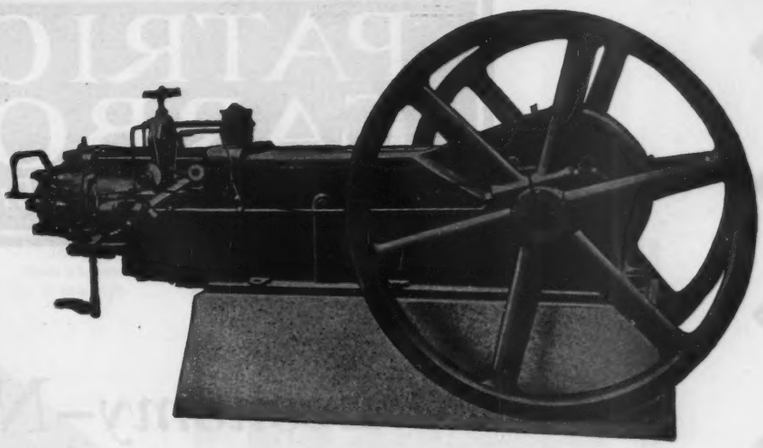
METRIC orifice METERS

METRIC METAL WORKS
of the American Meter Company—Inc.
ERIE • PENNSYLVANIA • U.S.A.

Franklin Valveless Oil and Gas Engines

Some of the Franklin OF Good Points

- Enclosed type
- Low fuel consumption
- 100% interchangeability
- Simplicity
- Piston rod is fitted with metallic packing which never needs adjusting or replacing
- Every spring exposed
- Complete simplicity with practically no adjustment
- In case of belt breakage engine automatically stops
- Fuel pump driven by eccentric running in oil bath
- Bearings are removable and reversible
- Only standard threads used. No special wrenches required
- Cylinder has 3 point force feed lubrication
- Balance of lubrication is splash feed
- Pistons are air cooled
- All nuts subject to vibration are castellated and fastened with cotter pins.
- Most economical to operate in fuel, lubricant, water and repairs
- Easy to start



Here Is Practical Standardization

The new and improved Franklin Oil Engine, identified as type OF is made in three sizes: 12x16 (40 HP) and 13x16 (50 HP) and 16x16 (80 HP) for drilling, pumping and power.

ALL FRANKLIN VALVELESS 16″ STROKE ENGINES ARE INTERCHANGEABLE ON THE SAME BLOCK

After drilling the well, the operator can install one of the lighter units upon removal of the drilling engine. It fits the same block perfectly.

It is to the operator's interest to see that his drilling contractors use the Franklin since by doing so the cost of a new engine base is eliminated.

Here is practical standardization in which the benefits are mutual.

Send for literature.

Type BG Clutch for Cable Tool Drilling or Pumping

A vast improvement over the former type of clutches.

Driven from pulley on engine. Permits the use of a larger diameter pulley and makes possible a slower clutch speed. Operates by hand lever on derrick.

Construction and design prevent Reverse Clutch Troubles.

PRICE—$1200.00 F.O.B. Franklin, Penna.

Franklin Valveless Engine Company

Franklin, Penna.

PRICES

40 H.P. Type OF Franklin, including water circulating pump and pulley. *$1550 F.O.B. Franklin*

50 H.P. Type OF Franklin, including water circulating pump and pulley. *$2050 F.O.B. Franklin*

80 H.P. Type OF Franklin, including water circulating pump, pulley and air starting equipment. *$3200 F.O.B. Franklin*

NOTE—Type OF is readily converted into type OG for gas fuelization.

Distributed by

OIL WELL SUPPLY COMPANY

Branches in All Oil Fields

PATRICK
CARBON
for Diamond Core Drilling

Actual Economy–Not Theory

ECONOMY results from reducing the total cost of any operation. No economy is obtained if a reduction in the cost of one factor of the operation is over-balanced by increased costs of other factors.

To every operator of a Diamond Core Drill, this principle should be an ever present consideration; for it is an easy matter to increase the drilling cost per foot through expenses that are not always entirely obvious. Expenses arising from shut-downs for repairs, excessive maintenance cost, time lost through delays, and the accompanying labor and material costs incident to these charges—not to mention slow progress in drilling and serious possibilities of inaccurate information—are dollars and cents factors of utmost importance.

In diamond drilling, economy results when a reduction in the total cost per foot is effected through reducing these indirect items of expense without correspondingly increasing the cost of other factors.

The Diamond Core Drill is used so extensively because it obtains accurate sub-surface information at a lower cost than any other method. The speed and cost at which it operates and the accuracy of the information which it produces are dependent upon the cutting element in the bit—and the material that shows the lowest cost per foot, all factors considered, should be used.

The Patrick Organization in its many years of intimate contact with Diamond Core Drilling all over the world has gathered a great deal of practical information on all factors entering into drilling costs. This information is available to anyone interested in obtaining maximum efficiency and accuracy in their diamond drilling operations—at minimum costs.

Write for the Patrick Booklet, "Diamond Core Drilling in Oil Field Practice." It contains a resumé of practical operating experience and is sent free upon request.

R. S. PATRICK
Duluth, Minnesota, U.S.A.
Cable Address, "Exploring" Duluth

J&L PIPE

12 INSPECTIONS INSURE UNIFORMLY HIGH QUALITY

J & L's adequate resources, ownership control of each process from ore mining to pipe making, nearly 80 years of experience in iron and steel making, and rigid inspection through each step of manufacture, are your guarantees that every length of J & L Seamless Casing you order is as nearly perfect as seamless casing can be made. Beginning with chemical and physical tests of raw materials, iron ore, coke and limestone (from J & L's own mines and quarries), inspection on J & L Seamless continues without interruption until the twelfth and final checking is made as the pipe is loaded for shipment.

In addition to the twelve tests and inspections (listed at right) a milling machine is kept busy constantly machining out samples for pull tests to insure tensile strength safely within requirements of the trade. Drillings are also taken during mill operations to be analyzed for chemical composition, and samples are microphotographed frequently to check grain structure.

Oil men declare: "There's no better Seamless made than J & L."

INSPECTIONS OF J & L SEAMLESS

1 Chemical tests of raw materials made at the mines and quarries, also before charging into blast furnaces.

2 Thorough analysis of pig iron produced by blast furnaces and metallurgical inspections as pig iron is made into steel in open hearth furnaces.

3 Chemical analysis for composition as steel is poured from open hearth furnaces into ingot molds.

4 Ingots rolled into blooms under temperature control.

5 Blooms pickled in strong acid to bring out defects. Inspectors pass blooms only after visible defects have been chipped out with pneumatic chisels.

6 As seamless tubes come from the straightener, inspectors scrutinize both outside and inside surfaces with the aid of specially designed lamps.

7 Ends trimmed; then pipe is inspected for wall thickness and correct outside diameter and roundness.

8 Pipe threads checked with certified gages and second inspection made for flaws, to insure clean cut accurate threads of proper pitch and taper.

9 Couplings as produced in our mills are closely inspected for correct tapping, threads accurately gaged for pitch and taper and checked on specially designed machines for alignment.

10 All items of previous inspections rechecked on testing benches, and stencil marks applied.

11 Each length given hydrostatic pressure test before rust-resisting coating is applied and pipe is delivered to shipping platform.

12 Final inspection of each length as it is loaded for shipment.

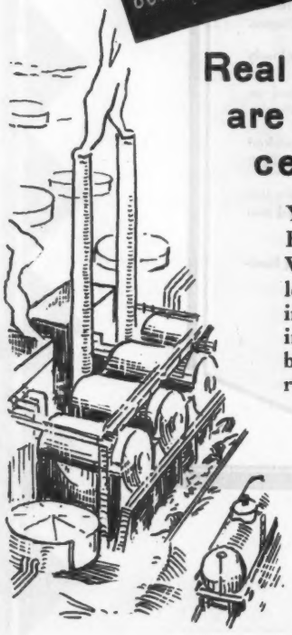
J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

Jones & Laughlin Building
PITTSBURGH - - PENNSYLVANIA

Acknowledged Standards

each filling a definite place in the Oil Industry



Real Savings in trouble—time—labor and expense are the chief reasons which account for the success of these 4 Hills-McCanna Products.

Young Tank Car Bottom Outlet Valves prevent leakage of ladens in transit, also saving time and trouble at loading racks.

Hills-McCanna Lubricators do away with the uncertainties of gravity or hand oiling through positive pressure feeding of oil to all Bearings and Cylinders.

Hills-McCanna Chemical Proportioning Pumps simplify pretreatment problems injecting proper amounts of acids under pressure into crudes and charging stocks.

Hills-McCanna Alloys, Plugs, Wells, Fittings, Bearings, Gears, etc., withstand the action of corrosion and wear, saving on replacements.

Write for Bulletins.

HILLS-McCANNA CO.

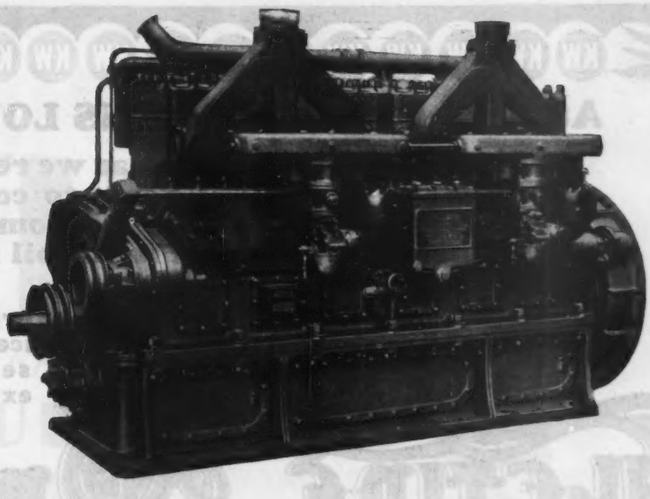
2351 NELSON ST.~ *Chicago*

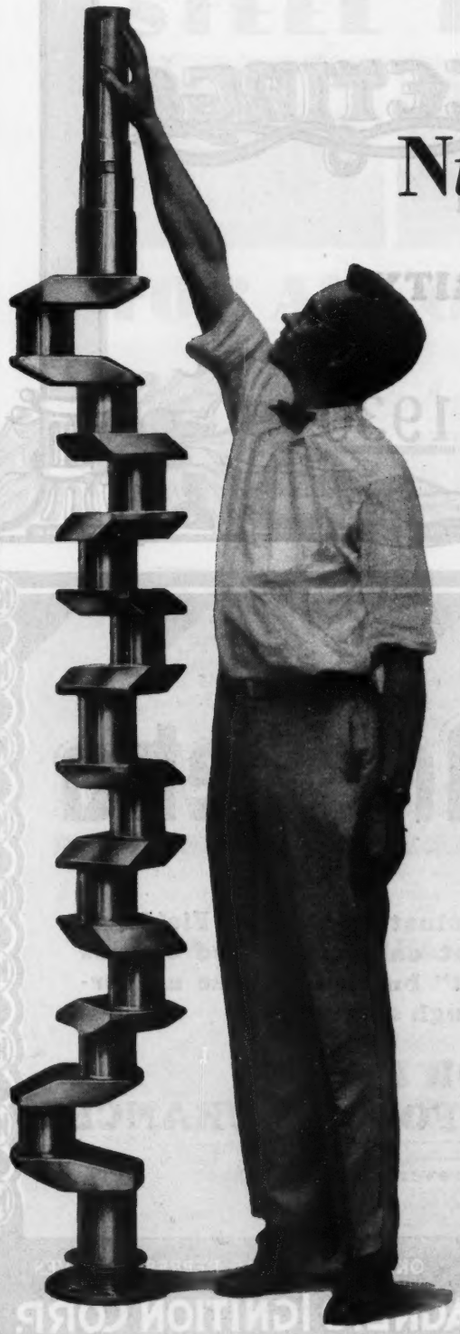
THE MOST COMPLETE SERIES OF ALLOYS FOR INDUSTRIAL USE
FORCE-FEED LUBRICATORS • PROPORTIONING PUMPS • TANK CAR VALVES

Dependable materials are the best assurance of dependable performance

Right: *Largest Waukesha oil field engine. Delivers over 275 H. P. at 900 R.P.M. Manufactured by* WAUKESHA MOTOR CO., *Waukesha, Wis.*

Below: *The Nickel Alloy Steel crankshaft for this engine is over seven feet long and has seven main bearings, each 4¼ inches in diameter.*





Nickel Alloy Steel Parts

Provide increased wear-resistance and strength in WAUKESHA 275 H.P. oil field engines

THE Waukesha Motor Company was one of the manufacturers early to recognize the commercial value of the hardness, toughness, strength and long-wearing properties of Nickel Alloy Steels, and to employ them for industrial engine parts. Nickel Chromium Steel crankshafts were featured in Waukesha catalogs as far back as 1913.

For more than 16 years Nickel Alloy Steel crankshafts have been standard construction on all heavy duty Waukesha motors, and the company reports that the results obtained have been uniformly satisfactory. Many of the clients to whom they furnish truck motors inform them that 100,000 miles between bearing adjustments is common and 200,000 miles of hard city driving without regrinding the crankshaft not unusual.

Extensive tests have shown that the average, maximum and minimum mechanical values of Nickel Alloy Steels vary less from heat to heat than other commercial steels. In the manufacture of machinery, where it is impractical to test the individual properties of each piece of steel used, this feature is particularly important. Nickel Alloy Steel furnishes a better combination of strength and toughness than any other available material.

Nickel FOR ALLOY STEEL

Probably the most impressive evidence of the uniformly dependable mechanical properties of Nickel Steel parts is the fact that practically all manufacturers of airplane engines, both in America and Europe, have adopted Nickel Alloy Steels for highly stressed parts, the weight of which must be pared to a minimum.

SEND FOR "BUYERS' GUIDE TO NICKEL ALLOY STEEL PRODUCTS"

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

AS THE CANDLE BURNS LOW

at the close of another year we renew our pledge to you for 1930 and the years to come—the same dependable, no trouble service from all K-W Magnetos that has been rendered in the oil fields for the past TWENTY-ONE YEARS.

May we take this opportunity of expressing to you the friendly spirit of our organization, whose success is dependent upon the service we can render, by extending

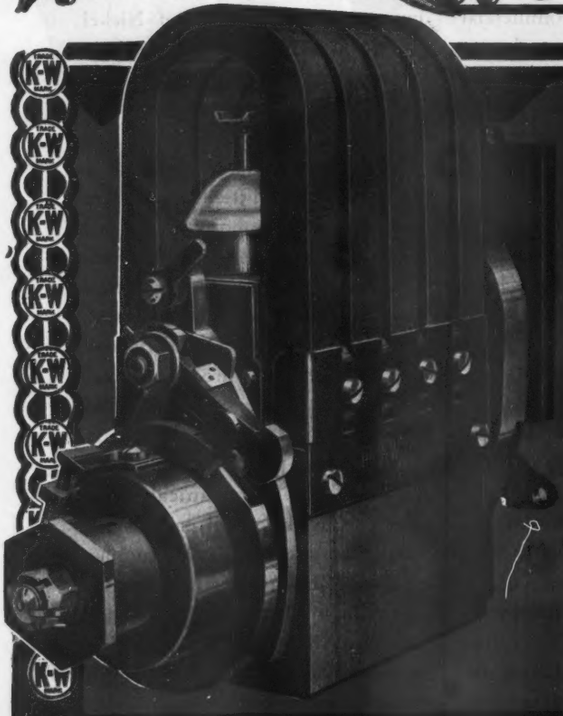
Yuletide Greetings

and Wishing You Increased

HEALTH - PROSPERITY

and

1929 **HAPPINESS** 1930



THE TRADE K-W MARK Magneto

which has predominated in the Oil Fields all these years is not only recognized still as "America's Finest" but has become universally known through service as

"A GIANT FOR POWER A BRUTE FOR ENDURANCE"

Models for every type of engine

MANUFACTURED BY
THE TRADE K-W MARK IGNITION CORP.
CLEVELAND, OHIO, U.S.A.

OKLAHOMA-TEXAS REPRESENTATIVES
MAGNETO IGNITION CORP.
306 E. SECOND STREET
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BUTLER
READY-MADE
STEEL BUILDINGS

FOR ALL OIL FIELD PURPOSES

FIELD offices, dwellings, pump stations, power belt houses, flowing plants, refineries, material supply depots, warehouses, bunk and mess halls, garages . . . Butler Ready-Made Steel Buildings shelter practically every activity of the oil fields. And the reasons . . . fire-safeness to offset remoteness from fire protection, complete materials, ready made and readily transported to outpost operations, speed in erection by whatever sort of labor crew available, lower investment and maintenance charges, structural qualities which insure permanence, yet which permit enlarging or taking down and re-erection. Send for the new booklet picturing many Butler installations. Call upon Butler engineers to supply full details and prices on any type structure in mind.

BUTLER MANUFACTURING COMPANY

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Kansas City, Mo.

STEEL BUTLER PRODUCTS

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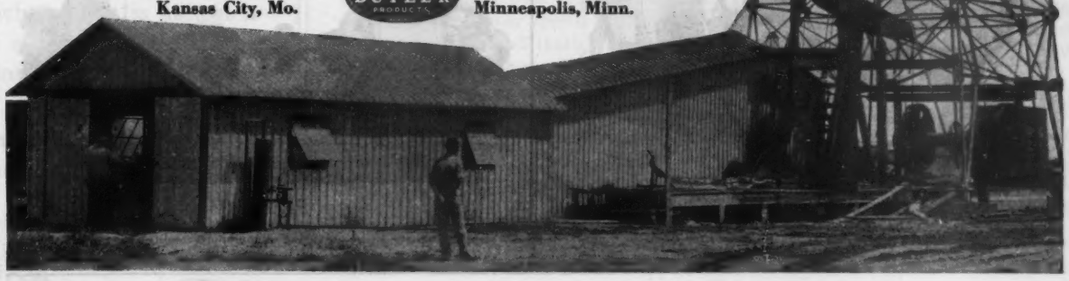

GOULDS PUMPS

—the Most Complete Line of Pumping Equipment

WHEN you buy a Goulds pump you receive more than a good pump—you receive the benefits of earliest possible shipments, the advantages of skilled engineering and designing, and the experience gained in 80 years of pump development and manufacturing.

Dependable pumps are of prime importance to the oil industry—for pipe lines, cracking stills, fire protection, reflux service and general service pumping. Regardless of your pumping problems—regardless of the viscosity, head or pressure range, or severity of service, you will find a Goulds pump exactly right in design and construction. You cannot overlook the value of pumping equipment backed by unsurpassed manufacturing, marketing, and service facilities.

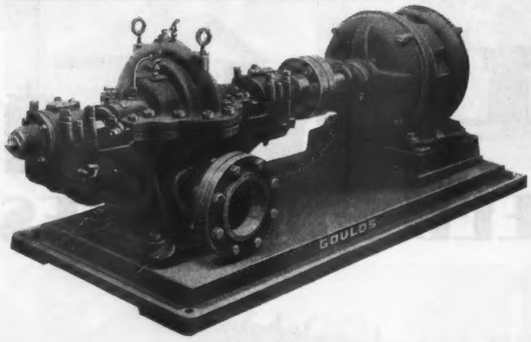

Fig. 3055
Single-stage, double-suction, babbitt-bearing pumps for wide range of capacities and heads up to 231 feet. A substantially built pump for general service.

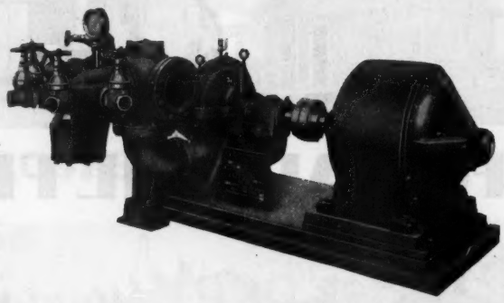

Fig. 3099
Approved fire pumps for all installations; single- and multi-stage, motor or engine drive.

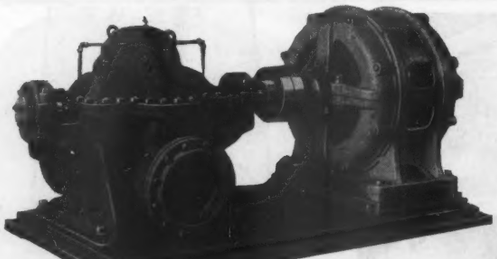

Fig. 3450
A complete line of all-ball-bearing pumps. Built to utilize high-speed motors and to give remarkably high efficiencies.

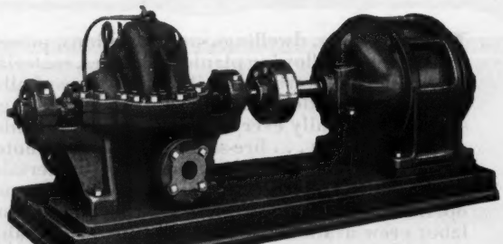

Fig. 3380
Compact double-stage units for small or medium capacity against high heads. Water-cooled bearings for handling hot liquids.

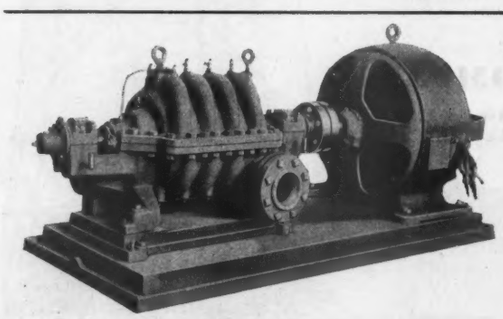

Fig. 3330
Multi-stage, double-volute centrifugal pumps showing high maintained efficiencies over long periods. Available in sizes from 3 in. to 8 in.

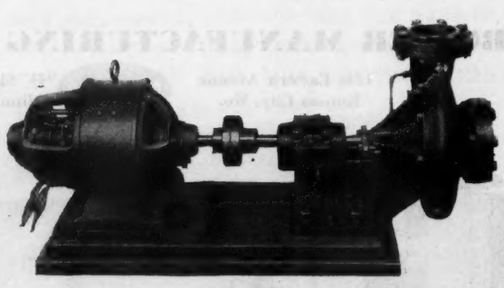

Fig. 3600
Inexpensive pumps for general service. Side suction, enclosed impellers, sizes 1½ in. to 10 in., covering all pumping conditions up to 100 ft.

GOULDS PUMPS, Inc., Seneca Falls, New York

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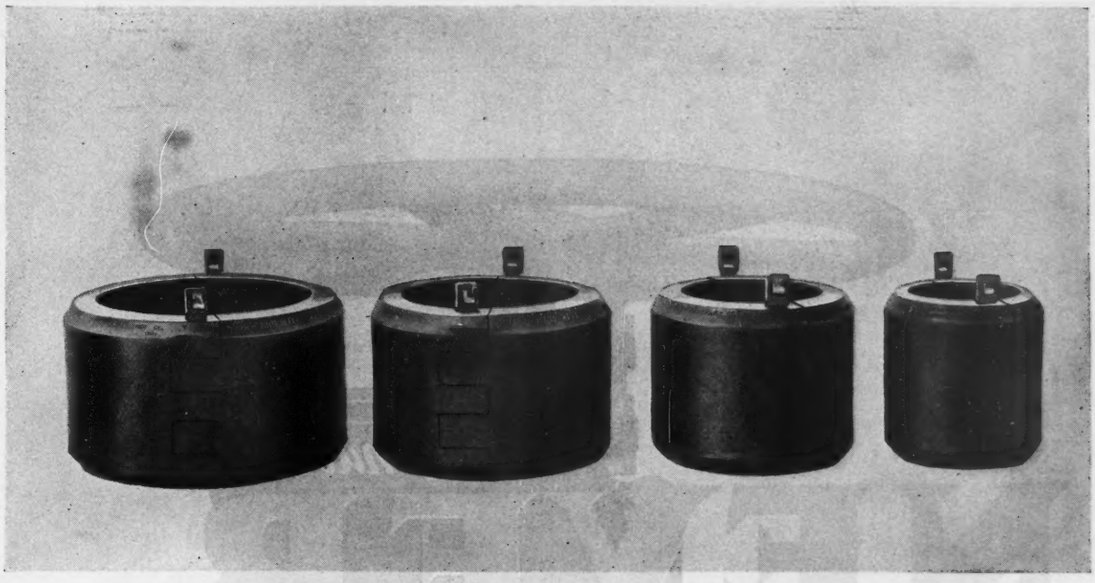

No other casing guard has these important features

THE Goodrich Grip-Tite Casing Guard has a metal-locking construction, *completely embedded in rubber,* and so unique that (1) the guard can be applied to the pipe in *a few seconds;* (2) it cannot possibly work loose or change its position.

Yet that is but part of the story. It is an equally important feature that the rubber cannot come loose from the metal. Engineers are familiar with the Goodrich Vulcalock Process — by which rubber is "locked" to metal. The union achieved by this process is so strong that in adhesion tests the rubber itself will often tear before it separates from the metal. The development of this Goodrich process is almost a romance; it is a vital feature of the Grip-Tite Casing Guard.

It is also an important feature that the metal is completely *embedded* in the rubber. There can be no metal-to-metal contact.

See how this metal locking construction eliminates delay in putting on and taking off

Goodrich Grip-Tite Casing Guards need no expensive and clumsy special appliances to apply. A hammer is all that's required. Any workman can put them on in ten seconds. And it's just as simple to remove them. Unlock the pin—that's all. They eliminate wasteful destruction—unavoidable when old-type guards are used.

Twenty-five to thirty-three per cent saving in power is not unusual when these guards are used. They eliminate friction between the casing and drill pipe, increasing the speed of deep-well drilling.

If you don't already know all about them—if you're not already using them —let us give you additional information. The B. F. Goodrich Rubber Co., Est. 1870, Akron, Ohio.

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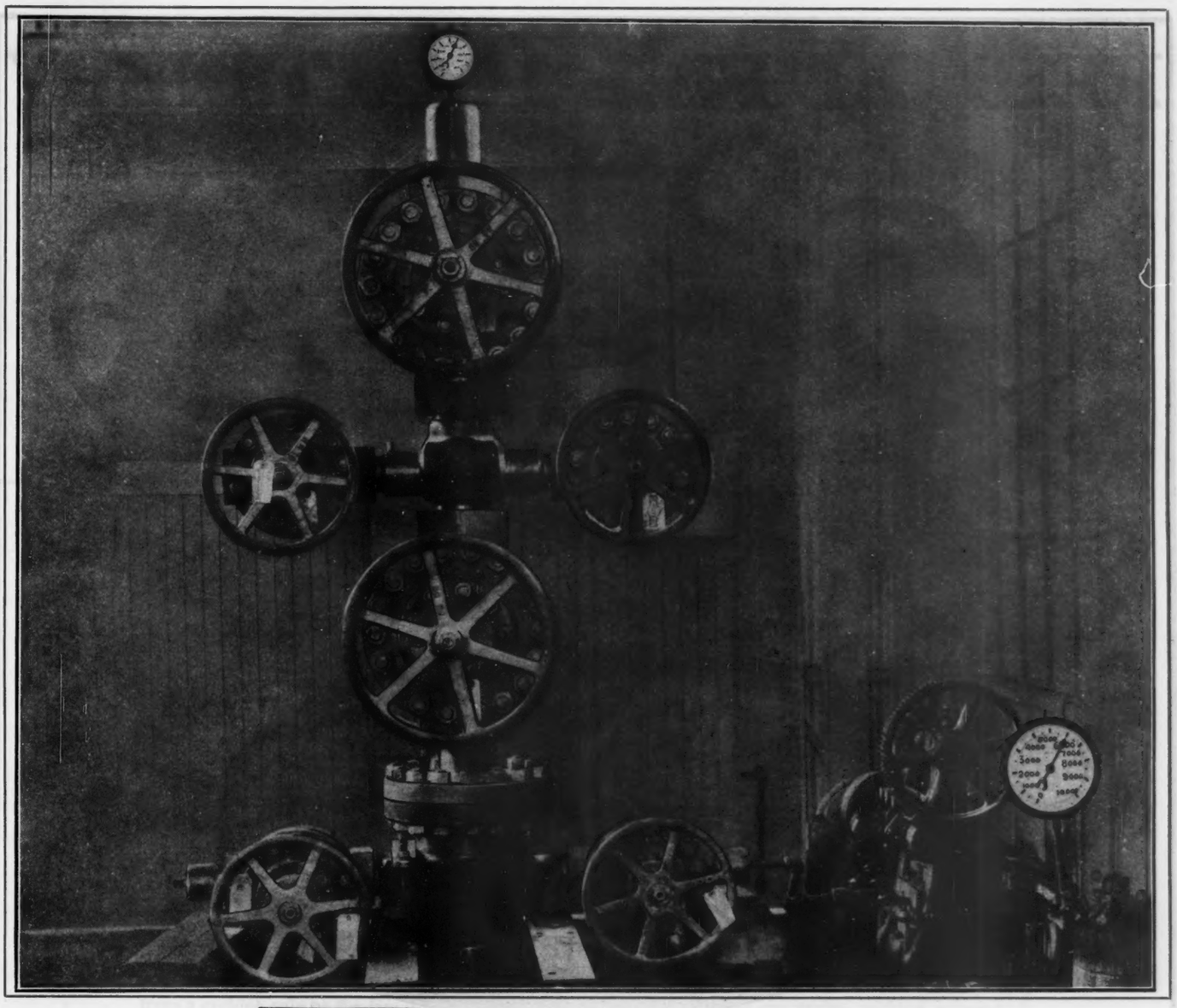

REGAN High-pressure Casing Head

TESTED to 6,000 lbs.

The above photograph shows a Regan Casing and Tubing Head hook-up under 6000-pound test—with Christmas Tree fittings and valves. The entire assembly was placed under test and then delivered intact to Kettleman Hills for installation.

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Eight Sizes
12-15-20-25-31-35-40HP

Descriptive Bulletin
No. 40

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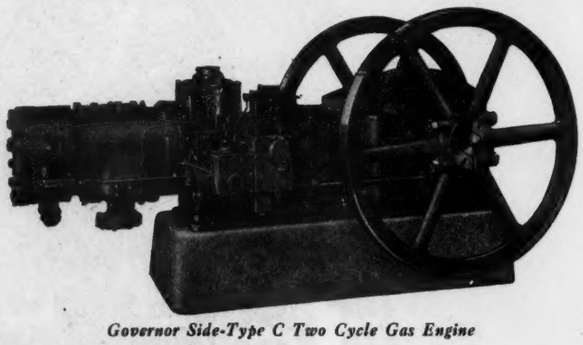

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Reid Band Wheel Powers can be equipped with bronze bearings or Timken Tapered Roller Bearings.

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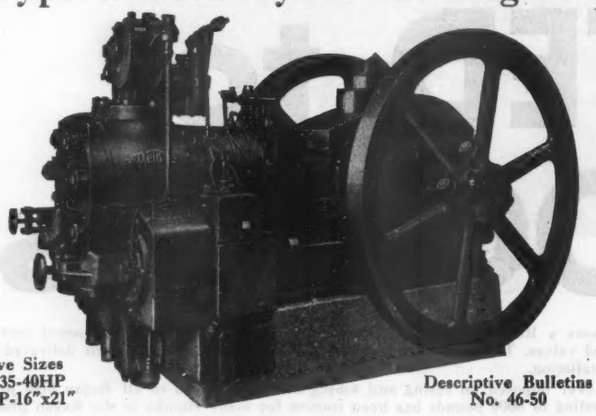

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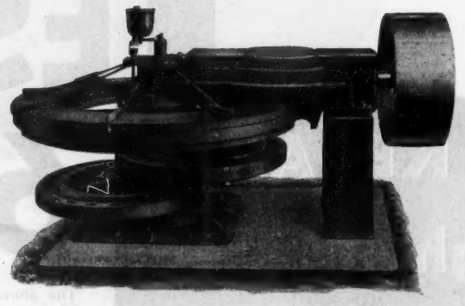

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Control Casing Head

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Type "C"

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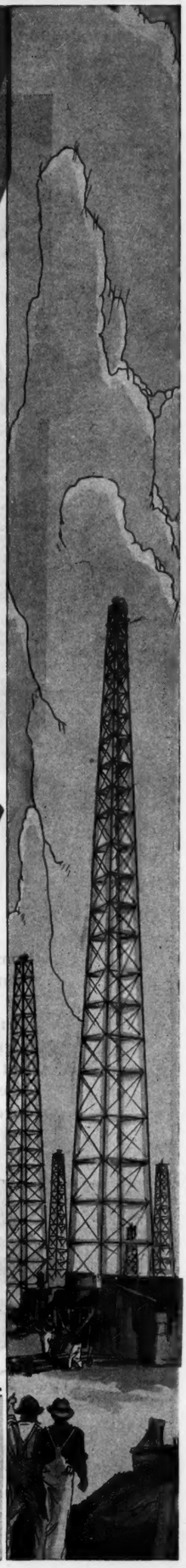

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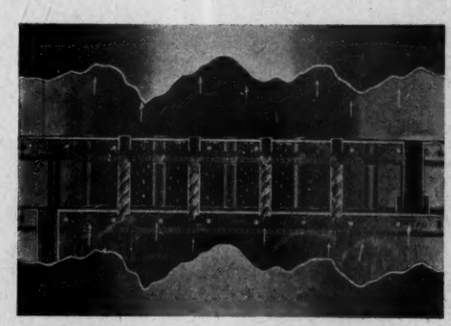

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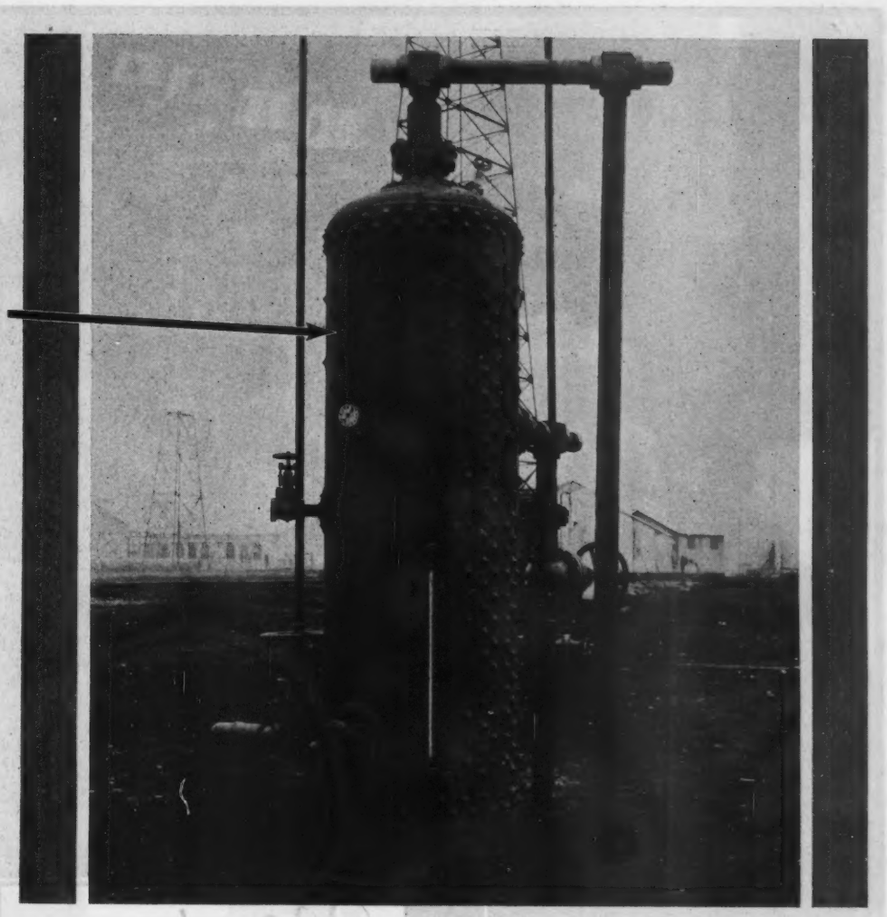

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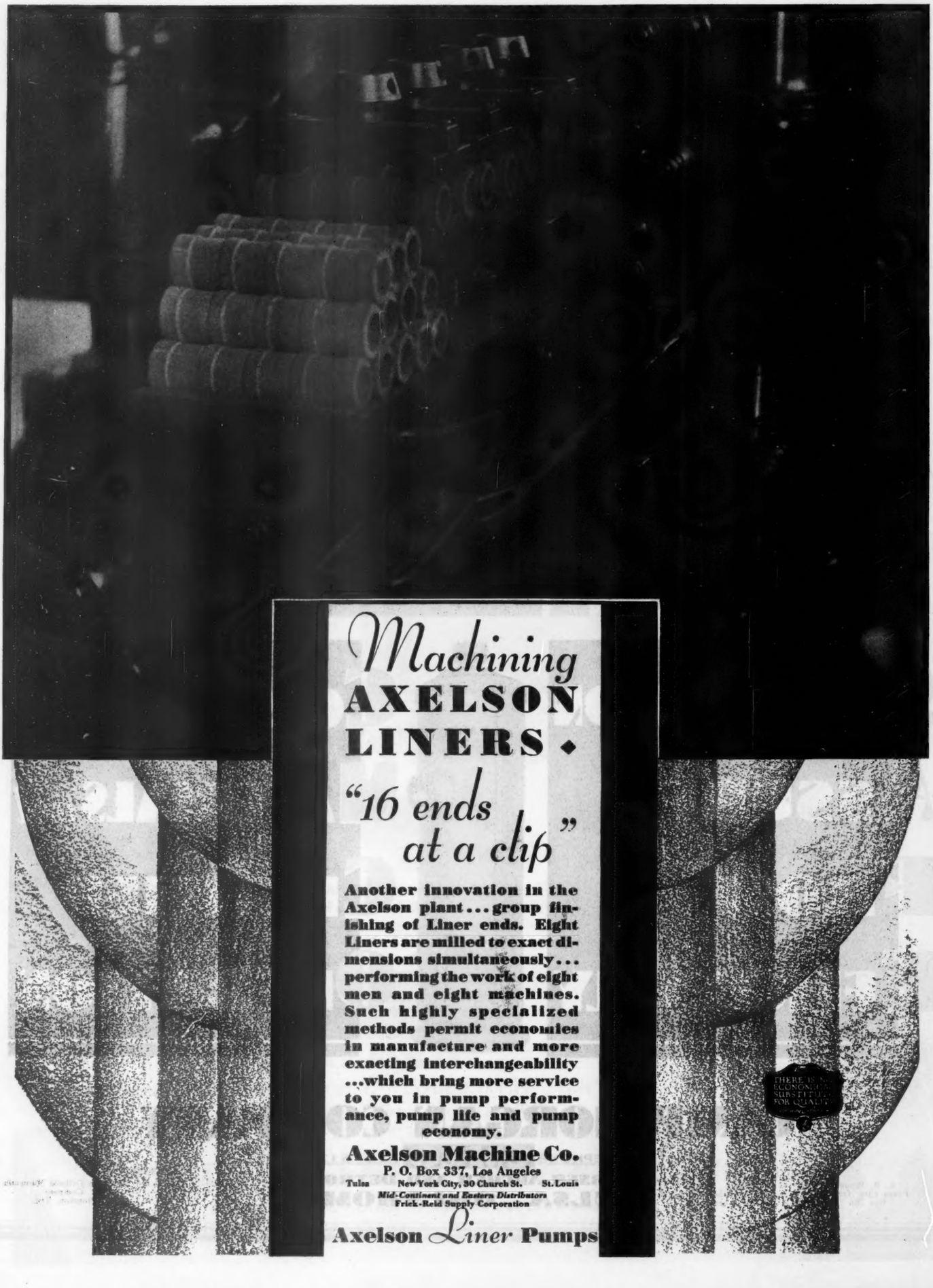
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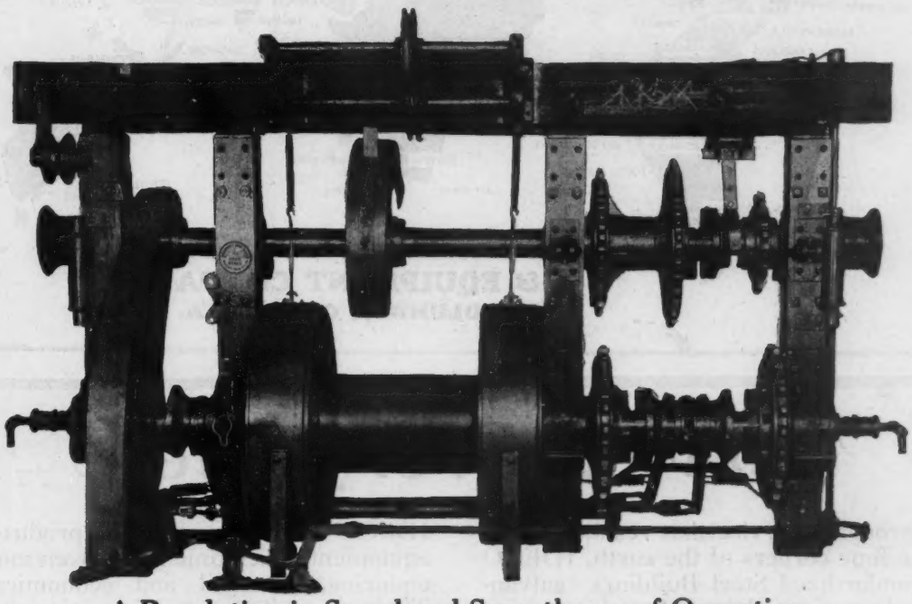

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State _____

Refinery Section Starts on Page 197

Outlook Bright As Year Draws to Close

Highest daily average estimated total production in 1928, week ended Dec. 29, 2,585,844 bbls. Lowest in 1928, May 19, 2,338,241 bbls.

Despite Vast Potential Overproduction, Conservation Movement Has Stabilized Industry. Efforts to Continue

Highest daily average estimated light oil production in 1928, week ended Dec. 29, 2,158,134 bbls. Lowest in 1928, Mar. 3, 1,927,713 bbls.

By Andrew M. Rowley

One of the most remarkable years in the history of the petroleum industry is closing with the outlook very bright for stabilization in all branches of the industry despite the fact potential crude oil production is the greatest in history and far in excess of present needs and market requirements. The Santa Claus in the present situation which makes prosperity possible even under such conditions of potential vast overproduction is the conservation movement and the determination of oil men everywhere to continue to co-operate and lay aside selfish interests in order that stabilization may remain a fact and not a theory.

The barometer of success and a possible let-down in the conservation movement in the Santa Fe Springs Field in California continues to rise and fall somewhat frequently but latest developments there indicate operators will do all in their power to hold down production of crude oil regardless of how many wells are completed. While there may not be any restriction upon drilling or the completion of new wells, it is realized the flood of crude which would result from completion of all wells now drilling and planned would be in excess of what can be handled, with a consequent break in the crude market for that area at least. There is an earnest desire to avoid such an eventuality and those in close touch with the situation and the feelings of the different companies are hopeful co-operation will be maintained and conservation made effective, at least to the extent of preventing a reduction in the crude oil price schedule there.

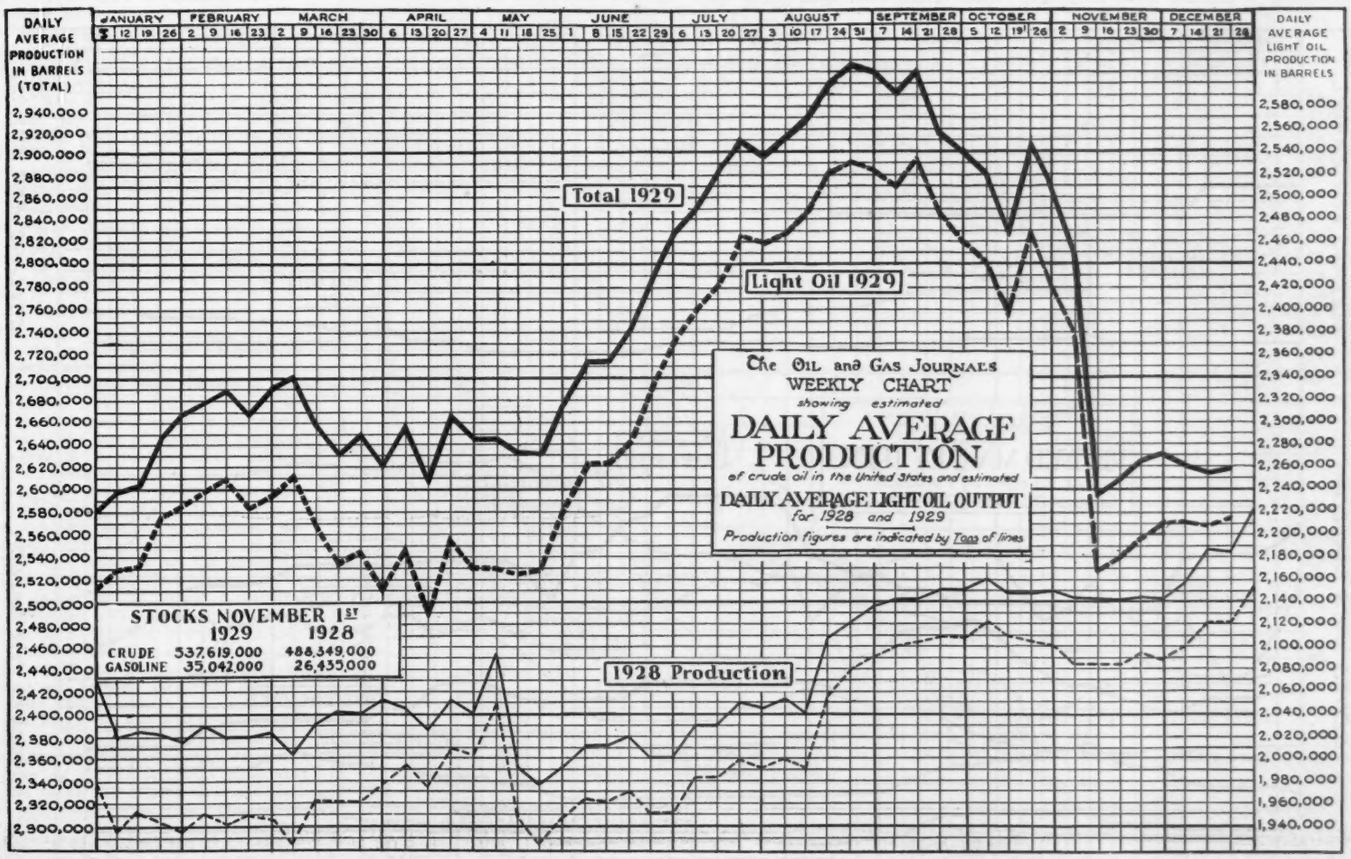
The situation in the Mid-Continent area and throughout Texas continues good and under splendid control. As present conservation agreements expire, extensions of time are decided upon and it is pretty safe to say there will not be any overproduction in the Mid-Continent area this winter. Considering the fact numerous prolific high gravity pools have been opened, this is a remarkable situation and one reflecting the utmost credit upon the industry.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended December 21, and a comparison with the previous week follows:

	—December 21—		—December 14—	
	Light	Heavy	Light	Heavy
Oklahoma—				
Oklahoma City	65,480	.....	64,410	.....
St. Louis-Pearson	51,415	.....	55,435	.....
Seminole	225,870	.....	231,180	.....
Northern Miscellaneous	234,810	.....	241,185	.....
Southern Fields	57,385	.....	57,770	.....
Total Oklahoma	634,960	.....	649,980	.....
West Texas—				
Hendricks	95,420	.....	95,040	.....
Yates	141,406	.....	142,700	.....
Remainder	114,109	.....	113,401	.....
Total West Texas	350,935	.....	351,141	.....
North Louisiana	33,385	5,480	34,085	5,530
Arkansas	18,885	43,040	19,295	43,230
North Central Texas	139,703	.....	140,211	.....
Texas Panhandle	110,850	.....	102,773	.....
East Central Texas	21,444	.....	19,814	.....
Kansas	111,935	.....	109,720	.....
Total Mid-Continent Area	1,422,097	48,520	1,427,019	48,760
Gulf Coast	.....	178,987	.....	183,049
Southwest Texas	.....	56,544	.....	55,805
Eastern	136,000	.....	135,000	.....
Rocky Mountain Area	71,932	.....	74,654	.....
California—				
Santa Fe Springs	175,000	.....	162,000	.....
Long Beach	105,500	.....	105,000	.....
Huntington Beach	41,000	.....	40,500	.....
Elwood	34,000	.....	37,500	.....
Ventura Avenue	51,000	.....	50,000	.....
Seal Beach	30,000	.....	29,000	.....
Remainder of State	150,000	120,000	146,000	123,000
Total California	586,500	120,000	570,000	123,000
Total United States	2,216,529	404,051	2,206,673	410,614
Grand Total	2,620,580		2,617,287	

→ **Total Increase, 3,293 Bbls.; Light Oil Increase, 9,856 Bbls.** ←


DAILY AVERAGE PRODUCTION IN BARRELS (TOTAL)
JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
DAILY AVERAGE LIGHT OIL PRODUCTION IN BARRELS
Total 1929
Light Oil 1929
1928 Production
The Oil and Gas Journal's WEEKLY CHART showing estimated DAILY AVERAGE PRODUCTION of crude oil in the United States and estimated DAILY AVERAGE LIGHT OIL OUTPUT for 1928 and 1929
Production figures are indicated by Tops of lines
STOCKS NOVEMBER 1ST
1929 1928
CRUDE 537,619,000 488,349,000
GASOLINE 35,042,000 26,435,000

Holiday Lull in Oklahoma Market

Little Activity in Spot Market Expected Until After First of Year. Trend Toward Trademarked Products in Contracts

By C. O. Willson

The usual holiday lull in trading was apparent in the Oklahoma (Group 3) market the first of the week with indications that it would continue over the remainder of the week. Most of the buyers and sellers were not expecting any activity in the market until after the first of the year.

Cold and snow throughout the Middle West and parts of the Southwest where practically all of Oklahoma gasoline is consumed, further weakened the spot market and prices on the domestic grades are lower than they were a week ago. Many of the refiners have adopted a policy of storing their gasoline output in excess of contract requirements until after the first of the year and they are not offering material on the spot market. Those who are moving their output currently in some cases have been forced to take distress prices, the few buyers being flooded with offers and for that reason are in a position to dictate prices. With a steady export movement the higher gravity grades of gasoline are relatively firm although concessions are reported from time to time in the 400 endpoint grade moving to domestic buyers.

The natural gasoline market is similar to the refinery gasoline situation. Prices on all grades are lower although Grade A material is not freely available. Trading is dull and most of the movement is confined to sales made earlier in the month.

Products used as fuel are stronger. This is particularly true of low cold test material. The tight fuel oil market which has been general in the Mid-Continent and Middle West since the first of the month continues. The higher gravity, low cold test grades are practically unobtainable for shipment before the first of the year. The few scattered cars that have been sold over the past week were generally at prices higher than last week. At the same time there is still considerable material at refineries which was bought earlier in the month, which has not been ordered out. The cold weather has stimulated the demand for furnace oil distillates and gas oils although the general price range of last week continues.

Some of the weak spots in the kerosene market have been taken care of and no additional price concessions are reported. There were no changes in the remaining products. Spot trading in lubricants and wax was practically at a standstill the first of the week.

Trend in Gasoline

With many new gasoline contracts with jobbers to become effective after the first of the year and others pending there is wide discussion within the trade regarding the outlook for 1930. There is a general belief that due to the fact that many jobbing interests have been absorbed by refining companies the jobber outlet for independent refiners is becoming smaller and smaller. Many of the major jobbers in the Middle West who formerly bought all of their gasoline, kerosene and lubricating oil requirements have been absorbed by large refinery organizations. This no doubt means that the independent gallonage will be less in 1930 than it was in 1929.

However, the secretary of a state jobbing association points out that despite this absorption process the number of independent jobbers is not decreasing. In his particular state there are more jobbers reporting gasoline tax payments now than there were a year ago. He explains the situation in which the so-called spot buying is less active than it was a year or two ago as due to the fact that the jobbers have become "trademark conscious" reflecting a similar development among their customers. That is to say, the customers and all types of dealers are buying products with a well established brand name. The larger refiners who have been in business for several years and who have carried on active sales and advertising campaigns have established their products with the consuming public and many jobbers are finding it expedient to sell their products rather than trying to develop their own line of trademark products. This is partially true of the smaller jobbers who are new in the business.

This development, of course, is not new. The trend has been apparent for some time but it has now reached the point where the smaller refiners are at

(Continued on Page 218)

REFINED MARKET BAROMETER

A holiday dullness in refined market trading was reported in all refining areas. Buyers were able to secure price concessions on some products in several refining areas, the weakness being particularly apparent in Pennsylvania and the East Coast. Refinery gasoline prices weakened in the latter areas and several grades of bright stock, paraffin wax and gas oil were also lower. In the middle western and northern states climatic conditions reduced the actual consumption of gasoline and this was reflected in refinery buying both on contracts and spot purchases. The kerosene market continues soft except in some of the coastal areas where the export demand has aided the domestic situation. There is a fair to strong demand for fuels extending from the low gravity residuum to the high gravity distillates. This demand centered in the low cold test grades.

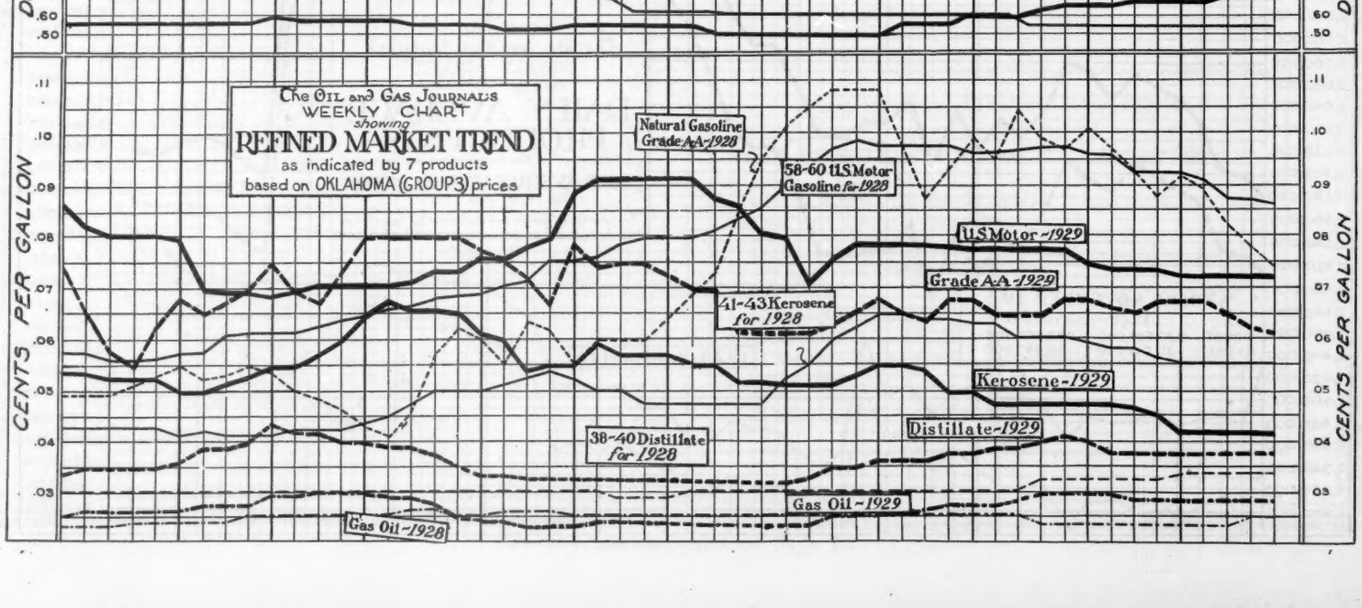
Mid-Continent—Domestic grades of refinery gasolines and natural gasolines slightly lower in price. No additional reductions in kerosene prices. Improved demand for furnace oils and high gravity low cold test gas oils. Fuel oils strong. No activity in lubricants and wax.

East Coast—Softness apparent with lower prices effective for gasoline, lubricating oils, paraffin wax and gas oil. Strong demand for domestic heating oils. Fair demand for kerosene with no change in prices. Routine trading in petrolatum. Fair export demand for gasoline and kerosene.

Pennsylvania—Prices lower on several grades of gasoline and kerosene. Bright stock demand less and prices lower. Neutral market unchanged.

Chicago—Cold weather and holiday season brings dearth of orders for gasoline. Kerosene dull. Good demand for furnace oils. Fuel oils, especially low cold test material, strong.

Gulf Coast—Trading practically at standstill. Gasoline, kerosene and neutral oil prices steady. Fuel oil prices reflect softness.



Ohio Oil Opens New California Field

Well at Playa del Rey Blows in Flowing Over 2,500 Bbls. Oscar Howard Drills World's Deepest Test

By L. P. Stockman

LOS ANGELES, Calif., Dec. 23.—The Ohio Oil Co. celebrated the holiday season by presenting the oil industry with a new oil field on December 19 when its No. 1 on the Recreation Gun Club's property at Playa Del Rey blew in flowing between 2,500 bbls. and 4,000 bbls. of 30.5 gravity oil daily from 6,199 feet. Ordinarily this would be a very welcome Christmas present but right now it isn't so desirable as it may complicate California's conservation program, unless some method can be devised to retard development work. The accompanying geological map, prepared especially for The Oil and Gas Journal by J. E. Eaton, Los Angeles geologist, shows the relative position of various Los Angeles basin fields and the location of the new oil field opened by the Ohio Oil Co. at Playa Del Rey. Geographically, the new field at Playa Del Rey is approximately 8 miles west of the Inglewood Field and about 15 miles northwest of the Lawndale area. It is spotted in the upper left-hand corner on the accompanying map and attention is respectfully directed to the adjacent town lot area.

Playa Del Rey, translated into its English equivalent, means the Playground of the King, but, judging by the subdivided area adjacent to the discovery well, royalty will be forgotten when this town lot drilling campaign gets under way. This new field, unlike Lawndale, is expected to be one of major importance, although of course this can be determined only by actual development. Present production from the discovery well is coming from the Miocene, which corresponds in age to the deep horizons now undergoing intensive development at Santa Fe Springs. The large production registered by the discovery well at Playa Del Rey proved somewhat surprising to many geologists and oil men, although it has been known for some time that an oil sand had actually been picked up. The miracle well, as it is now termed by some, was probably also an agreeable surprise to Ohio Oil Co. officials who, until its completion, were somewhat dubious as to the outcome. It is to their credit that their faith in the area remained unshaken notwithstanding their first test in this area was a duster. The showings found in the initial well, while unproductive commercially, were primarily responsible for the drilling of the discovery well.

Town Lot Development

The discovery of a new major oil field at Playa Del Rey and the possibility of intensive town lot development is naturally viewed with much concern by conservationists because of the disastrous effect which this might exert on State production in the face of concerted attempts to reduce State production by curtailment. The black cloud in this instance, however, has a silver lining in the form of drilling restrictions which may possibly mitigate against promiscuous development. The future status of the subdivided area adjacent to the discovery well is still problematical, although it is logical to assume that some of the area now restricted will ultimately be opened to the driller. Another factor which may tend to limit the area available for development is the public disapproval of drilling on acreage adjoining bathing beaches. The trend and areal extent of the new Playa Del Rey Field is naturally a matter of conjecture in view of the limited amount of development work undertaken up to the present. Some are inclined to believe a portion of the possible productive acreage at Playa Del Rey is out in the open ocean beyond the tideline. If this supposition is ultimately proven to be correct, town lots between the discovery well and the ocean are susceptible of development.

The Ohio's discovery well is a little over a mile back of the surf with the town lot area less than one-half a mile away. Most of the town lots in question are very narrow, the average width approximating 25 feet. The Ohio and several other operators have formed a number of community leases which will naturally reduce the number of drill sites, although there is no questioning that with unrestricted development this field might become an important factor in State production within six months. I am rather inclined to believe, however, that the brakes will be applied to prevent abnormal development both by the Ohio Oil Co. and the industry at large.

Other Ohio Co. Wildcats

The Ohio Oil Co. is to be congratulated on its successful achievement in discovering commercial production at Playa Del Rey as it has accomplished something which very few concerns have been able to do. A check indicates that practically all of the large fields discovered in the State have been opened up by major California operators. These include the Standard, Union, Shell, General Petroleum and Associated. The notable exceptions to this rule are the Ohio's discovery at Playa Del Rey, the Elbe Oil & Land Co.'s discovery at Round Mountain and the Milham Exploration Co.'s discovery at Kettleman Hills, which is one of the greatest fields discovered up to the present time.

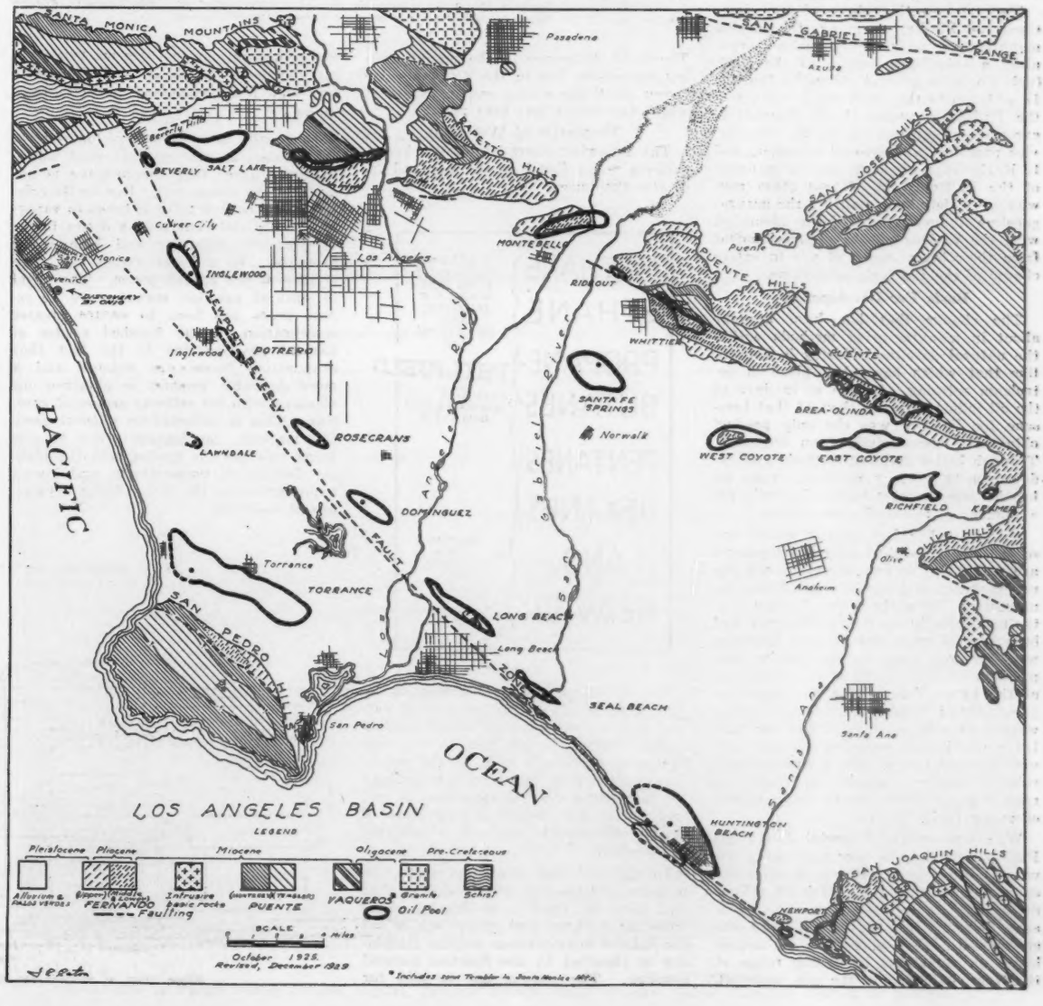
The Ohio Oil Co. is working on another wildcat in California which may become an important factor some time in the future. This is the company's test in the south dome at Kettleman Hills, which a short time ago came in flowing approximately 20,000 bbls. of salt water daily. This flow was subsequently mudded off and drilling resumed. A 20,000-bbl. hot salt water well does not look much like a new oil field but the fact remains that some favorable indications were logged in this project previous to the flow of oil. It is obvious that a second test might be more satisfactory with the application of successful engineering practice by which the water sand or zone may be avoided. It might not be amiss to mention that the Ohio Co.'s initial test in the south dome at Kettleman Hills is not yet entirely out of the running by any means. This well is approximately 1,500 feet deeper stratigraphically than producing wells in the north dome and consequently has not yet reached a depth comparable to the zone now producing. The Ohio Co. has just staked location for a new wildcat on the Sal Si Puedes Rancho in Section 2-6-34, approximately 10 miles south of Lompoc in Santa Barbara County, and an early spud is anticipated.

Drills World's Deepest Test

Oscar Howard broke the world's record for deep drilling when he concluded drilling operations on No. 7 Hathaway, in the Santa Fe Springs Field, preparatory to setting pipe for a production test. This record hole had been carried down to a depth of 9,350 feet upon the conclusion of drilling operations early Sunday morning, December 22. It is the present intention to land pipe somewhere around 8,200 feet, but the exact point at which the water string will be landed will not be determined until after a more minute check of all core samples. Several beautiful, well-preserved shells were discovered in core samples taken in the last few hundred feet of hole along with what looks to be a rather promising oil sand. This well is scheduled for an early test and if commercial production is secured it will be by far the deepest producer in the world.

The possibility of getting commercial production in No. 7 Hathaway is at the present time merely a matter of conjecture as the ultimate outcome cannot be foreseen previous to the impending test. The outcome is regarded by some as favorable notwithstanding the general impression that the possibility of getting production is somewhat dubious. The Hathaway lease is located in the southwestern part of the field in an area which does not look any too hot as far as the Buckbee, Nordstrum and O'Connell zones are concerned. Development

(Continued on Page 212)



Demand for Liquefied Gases Expands

Phillips Subsidiary Perfects Manufacturing Processes and Extends Outlets for New Products. Large Market in Prospect

By C. O. Willson

This might be termed the story of a company which has capitalized on research as applied to plant processes and market developments. From the broader viewpoint of the entire oil business it is a description of a manufacturing process which with the development of new markets, promises to become an important factor in the industry's profits.

The company referred to is the Phillips Petroleum Co. of Bartlesville, Okla. The new products, some of which are also being manufactured by other companies, are commonly known as liquefied gases. The more volatile gases are being used as domestic fuel, industrial gas, enricher for manufactured gas and the base material for manufactured gas. The less volatile are utilized as gas machine gasoline and commercial solvents.

The new development at present is more or less a by-product phase of natural gasoline plant operation the main purpose of which is to secure the regular grades of natural gasoline. The daily production of natural gasoline at present totals approximately 6,200,000 gallons daily. It is estimated by those in a position to know that there is potential production of the so-called liquefied approximately double the present output of natural gasoline. This indicates the possible expansion of this development whose potentialities from the marketing end are as great as the manufacturing phase.

To carry on this phase of its operations the Phillips company, the largest manufacturer of natural gasoline, organized a subsidiary known as the Philfuels Co. with general offices in Detroit. In addition to the executive personnel of the Phillips company G. G. Oberfell is executive vice president, R. W. Thomas, vice president and general manager, and L. E. Eldridge, assistant general manager of the Philfuels Co. These three men who are widely known within the natural gasoline industry have been identified with the various phases of development from their beginnings and are in active charge of the Philfuels operations.

Basis For Development

The change that has been brought about in manufacturing methods within the natural gasoline industry is not unlike that which has taken place in petroleum refining. In the early days of the oil industry it was thought that kerosene for lighting was the only product obtainable commercially from crude oil. Through better refining methods and the development of new markets, crude oil has become the raw material supply for a number of essential commodities.

On a smaller but equally significant scale the same evolutionary developments are under way in regard to wet gas, the raw material of the natural gasoline manufacturer. Formerly it was thought that the maximum in operating efficiency had been secured when the gasoline fractions were removed from the wet gas by compression or absorption, or a combination of the two. The residue gas after the gasoline had been extracted was either wasted or sold as natural gas for fuel. Little was known regarding the raw natural gasoline except that it was a highly volatile product which vaporized too readily to be attractive to many buyers of motor fuels.

With equipment of special design the Phillips company is now separating the various fractions of wet gas in much the same manner that the petroleum refiner divides the crude oil into gasoline, kerosene, distillate, gas oil, fuel oil, and other fractions. Both operations are largely based on variations in boiling range of the fractions found in the raw material.

TABLE 1.—PROPERTIES OF VARIOUS GRADES OF COMMERCIAL PARAFFIN HYDROCARBONS USED AS LIQUEFIED GASES

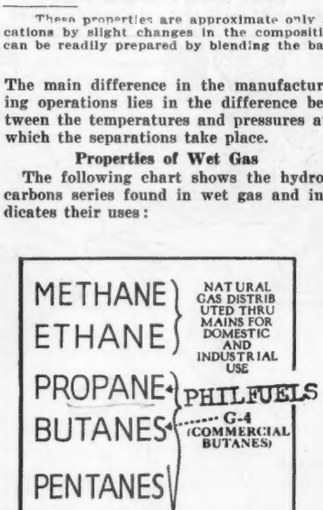
	Propane	Butanes	Pentanes	Hexanes	Heptanes
Philfuels Grade	G-3	G-4	G-5	G-6	G-7
Vapor pressure lbs. per sq in. Gauge—					
at 70° F.	120	33	9.5 lbs. Abs.	3.0 lbs. Abs.	2.0 lbs. Abs.
at 90° F.	165	53	14.3 lbs. Abs.	4.4 lbs. Abs.	3.0 lbs. Abs.
at 100° F.	195	65	2.6	5.4 lbs. Abs.	4.0 lbs. Abs.
at 105° F.	210	71	4.0	6.0 lbs. Abs.	4.5 lbs. Abs.
at 130° F.	300	110	14.0	9.7 lbs. Abs.	7.5 lbs. Abs.
Temp. at which pressure is 0 lbs. per sq. in. Gauge, °F.	—44	15	95	150	165
Specific gravity of liquid (water=1)	.509	.576	.630	.663	.720
A.P.I. gravity of liquid, °A.P.I. 60/60°F.	146.4	114.2	93.2	82.3	65.0
Initial boiling point, °F.	—45	12	80	145	180
Final boiling point, °F.	—40	30	100	165	205
Weight per gal. of liquid in lbs.	4.24	4.8	5.25	5.5	5.99
Mean coefficients of thermal expansion—					
From 0°F. to 50°F.	.001316	.000908	.000766	.000764	.000644
From 50°F. to 100°F.	.00174	.00118	.000940	.000792	.000684
Specific gravity of gas (air=1)	1.523	1.95	2.49	2.97	3.46
Specific heat of vapor at 60° F. (Cp)	.475	.458	.448	.442	.437
Dew point at 14.7 lbs. Absolute, °F.	—44	26	90	140	185
Cu. ft. of gas per lb. of liquid	8.49	6.7	5.17	4.21	3.67
Cu. ft. of gas per gal. of liquid	36	32	27	24	22
Limits of inflammability—					
Gas % in gas-air- mixture for lower explosive l'mit	2.4	1.9	1.5	1.1	..
Gas % in gas-air- mixture for maximum rate of flame propagation	4.7	3.6	2.8	2.0	..
Gas % in gas-air- mixture for Upper explosive limit	9.5	8.5	5.5	4.2	..
Maximum rate of flame propagation cm. per sec. in 2.5 cm. diam. tube	82.4	82.5	83.0	83.5	..
Heating value—					
B. t. u. per cu. ft.	2,550	3,200	4,090	4,830	5,690
B. t. u. per lb.	21,650	21,420	21,130	21,010	20,920
B. t. u. per gal.	91,800	102,400	110,500	116,000	125,300
Latent heat of vaporization at boiling point—					
B. t. u. per lb.	186	170	155	143	133
B. t. u. per gal.	788	830	811	788	797

These properties are approximate only and can be readily varied to meet exact specifications by slight changes in the composition of the various grades. Intermediate grades can be readily prepared by blending the basic grades indicated above.

The main difference in the manufacturing operations lies in the difference between the temperatures and pressures at which the separations take place.

Properties of Wet Gas

The following chart shows the hydrocarbons series found in wet gas and indicates their uses:



The Phillips company at present is operating 48 plants with an output of natural gasoline which totals almost 800,000 gallons daily. In addition to the conventional equipment used in the manufacture of natural gasoline, the company has installed additional apparatus at several plants with which a separation of the hydrocarbons is obtained as indicated in the chart.

In the ordinary plant operation the propane and butanes are divided so that part leave the plant as residue gas along with the methane and ethane which are the lightest hydrocarbons and the remainder is absorbed in the finished natural gasoline. The residue gas is sold for use as natural gas fuel if a market is obtainable near the plant, and if none is available it is dissipated in the atmosphere.

In regard to propane and butanes in the finished natural gasoline, most manufacturers agree that the propane is not desirable in motor fuel. Due to its relatively low boiling point it tends to vaporize readily and thus it is a direct factor in excessive volatility and high vapor pressure. To a lesser extent the same is true of the butane series. The trend in natural gasoline manufacture in recent years has been to secure greater stabilization in the finished grades of natural gasoline due to the fact that evaporation losses are reduced and a more desirable product is obtained for blending with the refinery grades of gasoline. This is reflected in natural gasoline markets, the highest prices usually being paid for the grades with the highest distillation temperatures and lowest vapor pressure, the latter being a measure of volatility.

Thus the removal of part or all of the propane and butanes from the finished gasoline as is done at the Phillips plants does not detract from its motor fuel value but rather adds to it. In addition to the propanes and butanes some of the Phillips plants have the necessary equipment to remove pentanes and hexanes leaving a natural gasoline product with still higher distillation temperatures and a lower vapor pressure. The market for the liquefied pentanes and hexanes as yet is not large.

A control of operations has been obtained so that a sharp cut can be made in the separation of the vapors containing the hydrocarbons.

Method of Manufacture

In the manufacture of liquefied gases the volatile condensate from which they are obtained is secured in the first phase of the natural gasoline plant operation. The desired hydrocarbons are separated from the heavier condensate which comprises the regular grades of natural gasoline and the lightest hydrocarbons which constitute the residue gas.

The accompanying picture shows a representative installation of the combined operations in which both the regular grades of natural gasoline and the liquefied gases are secured. The flow chart illustrates the main features of that phase of the process from which the liquefied gases are secured.

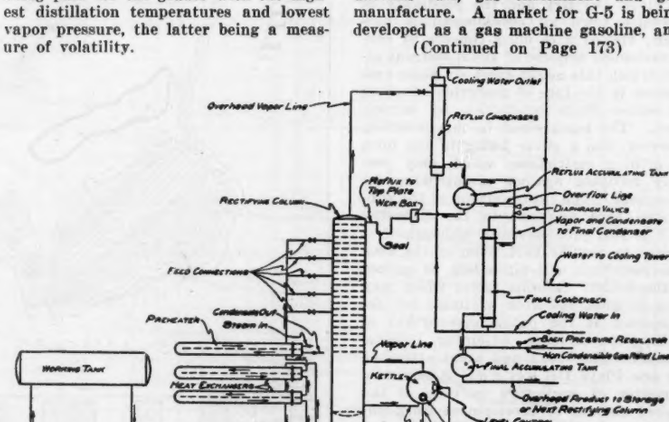
The control of operation is so precise that in the first rectifying column a sharp separation is effected between the natural gasoline and the overhead condensate which contains the liquefied petroleum gases. It is then necessary to further process the volatile overhead condensate. It is passed to a second rectifying column where the butane fraction is withdrawn as a base product and the overhead condensate, predominantly propane, is passed to a third column. From the base of the third column the propane is recovered substantially free from more volatile constituents, the overhead gas being passed to the residue gas line at the plant or dissipated to the atmosphere.

Four Products

At present four main products are marketed by Philfuels Co. For the sake of simplicity, these products are known as G-3, G-4, G-5 and G-6.

G-3, consisting of substantially pure propane, is used primarily as a domestic fuel. G-4, composed principally of the butanes (iso and normal), is used for industrial fuel, gas enrichment and gas manufacture. A market for G-5 is being developed as a gas machine gasoline, and

(Continued on Page 173)



Flow chart of process for manufacture of liquefied gases.

Many Oil Field Problems in Canada

High Pressure Coupled With Extremely Low Temperatures Presents Interesting Features in Connection With Drilling

By C. P. Parsons

Ninety-four per cent of Canada's oil production and the bulk of wildcat development is in the province of Alberta.

In terms of barrels per day the Turner Valley Field alone is producing 85 per cent of Canada's oil but in terms of dollars the percentage is much greater. This high value is due to the production of a wet gas which readily releases in the separator a 73 gravity crude naphtha worth $3.50 a barrel. Turner Valley also produces a high gravity light crude oil from sands above the wet gas formation. Completing a well in the oil sands is at present merely a backing up procedure when they fail to find the wet gas.

The search for and production of this wet gas is the highlight of Canadian Field operations.

The gas has high reservoir pressure which at present is not definitely known, due to the fact that the wells have not been shut in. The present estimate of the pressure runs between 2,500 and 3,000 pounds per square inch, which is much lower than the general estimate of several months ago. This is merely a corrective change in estimates and does not mean that the pressure has declined accordingly.

Pressure and Temperature

The high pressure coupled with the 22° below zero flowing temperature of the wet gas presents several interesting and distinctive drilling problems to prepare the wells to properly take care of low temperatures when open and high pressures when closed.

If a Turner Valley wet gas well were to be completed in the usual manner of cementing the bottom part of the hole behind a string of casing and leaving the top part filled with rotary mud or water, the low temperature of the flowing gas will freeze the mud or water to solid ice. This freezing expands the mud or water, which it is feared will tend to injure the casing, much the same as frozen milk will often burst the milk bottle. The Canadian Department of Mines has a collapsed section of casing which they claim was damaged by ice behind the pipe.

The bad effects of this freezing may not show up while the well is open and the mud or water behind the pipe is solid ice but if the well were shut in and the temperature rises to normal the ice would melt. Then, if the casing were sufficiently damaged the gas would either immediately start flowing out behind the casing or the mud or water would "lubricate" into the well and reduce the head pressure of the fluid to a point where it would not be sufficient to hold the gas pressure any longer and a blowout would result.

Cementing Casing

Considering it undesirable to leave mud or water behind the gas string the question came up of cementing the string from top to bottom. In the case of wells completed with just surface casing and a gas string, cemented from top to bottom, there was a feeling that the low temperature of the gas would cause contraction of the casing which might cause the casing to part, it being rigid, and allow possible dissipation of the gas into upper formations. There was no concern about blowouts at the surface. This theory, of course, is one with considerable conjecture but it is interesting to note in a very worthwhile paper[1] presented at the recent A.P.I. meeting at Chicago that casing expands 0.78 inch per 100 feet for a temperature change of 100° F. Assuming this to be reversible then the theoretical contraction of a gas string in Turner Valley, due to temperature change, would be about 3 feet. Also, according to the formula given in the paper, if the gas string in Turner Valley were restrained from expanding or contracting there would be a pulling stress on the metal, due to temperature, of about 18,000 pounds per square inch. This may or may not be dangerous under the actual conditions in Turner Valley. The probable results from low temperature at present is in the theoretical stage in the field, as actual results will not be known until the gas wells are shut in.

But considering and assuming all the possible theoretical results of high pressure and low temperature in Turner Valley; considering the large amount of money invested in each well producing wet gas from the deep lime in that field; and considering the protection and possible later production from the shallower oil sands that lie just above the wet gas formation, the following casing and cementing program is being tried out by one operator:

One Program

1. As in all Turner Valley wells a string of surface casing is cemented at from 250 to 400 feet. This string shuts off the only water found at present above the oil sands in Turner Valley.

2. A string of 8¼ cemented from top to bottom at 4,000 to 4,800 feet on top of the Fernie series, which contains both the Home and Dalhousie oil sands. This string acts as an assurance against damage from any of the temperature and pressure problems mentioned, besides being assurance against damage from a blowout of the high pressure gas while drilling. It also might serve later as a production string for the Home or Dalhousie oil sands if the deeper wet gas is not found.

3. A string of 6⅝ set on top of the wet gas formation at 5,000 feet or more, with flush joints in open hole below the 8¼ and cemented. If the wet gas formation is found and looks promising it was thought that this gas string should

(Continued on Page 176)

—Photograph by W. J. Oliver, Calgary, Canada.

Closeup aerial view of part of Turner Valley Field, Alberta, Canada.

—Photograph by W. J. Oliver, Calgary, Canada.

Aerial view of Turner Valley, Alberta, Canada. Imperial Oil Co. camp in upper center. Canadian Rockies in background.

[1] "Analysis of Casing Stresses," by C. J. Coberly, p. 35.

Gas Field on Kansas Airport Property

Shallow Production Found in Area Near Kansas City. Geology Interesting and Drilling Problems Are Unique

By L. G. E. Bignell

In the November 14 issue of The Oil and Gas Journal there was an article about the "Potential Missouri-Kansas Oil Fields," which described in a general way a series of structures that are found southeast, south and southwest of Kansas City, Mo., and extending in a northeast-southwest line through part of Missouri and Kansas. In that article it was stated that there were indications of this type of structure extending under the area occupied by Kansas City, and this present article will deal with some gas structures that have been developed to the northwest of that city in the State of Kansas at the conflux of the Missouri and Kansas Rivers.

This area lies adjacent to Kansas City, Kans., and has been quite well developed on one structure with some work done on another and gives promise of being an important gas area, not so much because of the ultimate volume of gas that is to be produced, but because of the importance of this gas to the industrial development of factory sites on acreage near the gas field.

Interest was first taken in the gas possibilities of this area by Guy E. Stanley, president of the Fairfax Airport, Inc., who had seen and studied old well log records of holes drilled around Kansas City and was impressed with the possibilities. Much of the information has been obtained through the courtesy of H. B. Goodrich and Dunn and Lewis, all of Tulsa.

The first development was supervised by Harry C. Higgins, resident engineer of the Union Pacific System, and the Kansas City Industrial Land Co.

Throughout all of this development period, Dr. A. C. Boyle, chief geologist for the Union Pacific System, and a resident of Laramie, Wyo., directed and was consulted about all operations for he has been conversant with the possibilities of striking gas in this area for many years.

Fourteen Producers

The Kansas City Industrial Land Co. has drilled 23 wells in all and 14 of them are producing at this time. This gas is being used for fuel purposes in several industrial plants located upon land that has been plotted for factory sites and is served by railroad spur that connects with the Kansas City Terminal Railway System.

Most of these wells were drilled with a drilling machine for they are less than 400 feet deep and are finished with not to exceed two strings of casing and a string of tubing.

With this development under way the Fairfax Airport, Inc., operators of the airport in the adjacent area northeast of the Kansas City Industrial Land Co.'s holdings, decided to develop their land with the idea of using gas in the hangars, office, flying school and other buildings at the airport and their first well was drilled in the winter of 1928.

They secured a good showing of gas in that well and since then have drilled 19 holes and have 14 producing wells, each having a capacity of approximately 1,500,000 feet daily under open flow test at 4-ounce pressure.

The history of this gas development really dates back to 1872 when a well was drilled near the site of the old Kansas City, Mo., railway station. This well penetrated to the top of the Mississippi lime and there are rumors that it encountered some gas showings. As it did not strike oil it was abandoned.

Test Holes Drilled

From that time on there were test holes drilled in various places in and around Kansas City and they all seem to have passed through very similar formations and some of them had gas showings, while others found small amounts of oil.

There is a rough log of a well drilled by H. S. Clark & Son in 1889 in Section 20, Township 10, Range 25, that is reported as having made 120 bbls. of oil daily from a 58-foot stratum of black oil sand found in the Cherokee shale at a depth of about 815 feet. The Cherokee shale is reported as being about 222 feet thick and was found at the bottom of this 815-foot hole.

Another well was located at Raytown, Mo., southeast of Kansas City and drilled in 1886 to a total depth of 2,348 feet and reported reaching the top of the granite. A complete log of that well is contained in the Missouri Bureau of Geology and Mines report Volume 16, second series, pages 143-144.

As this area occupied by the Fairfax Airport, Inc., became of considerable industrial importance because of the possibilities of supplying gas to the airport activities and selling the excess gas to the gas company serving Kansas City and adjacent territory, it became evident that it was necessary to evaluate and geologize this area, so that future activities could be carried on in a good businesslike manner.

Mr. Stanley has consented to The Oil and Gas Journal using part of this report at this time so that a fuller knowledge of the possibilities of this area may be had by others who are interested, and because a gas field located so near a town of the size of Kansas City is always interesting because of its potential possibilities.

Fairfax Airport gas well protected by pyramid of logs.

Geological Work

The geological work had to be carried on in the flat black land bottom of the Missouri River without sign of outcrop of rock formations in the area being drilled for gas and it presented many problems which were finally solved by making a detailed study of the bluffs that lay parallel to the river channel on each side of the river and northeast and southwest of the Fairfax airport.

Between the bluffs at this point it is approximately 2½ miles distance at their closest points and widens out to several miles across the valley at other places both up and downstream.

There is a surface structure beyond the river bluff that is on the northeast side of the Missouri River that had already been mapped by the Missouri Geological Survey and this work was checked and used in the report as submitted to Mr. Stanley.

There is a well located on the west slope of this structure that was drilled many years ago and which is reported as showing oil. The log of that hole is available from the records of the Missouri Geological Survey reports.

There are also several logs of other wells drilled in this immediate vicinity and by correlating these various data it was possible to get a very good generalized geological column.

The conclusions given in the geological report submitted to Mr. Stanley states that gas accumulations in this area are due primarily to the type of structures, but may be locally influenced by lenticular sand conditions, where the sand lenses may thin out and disappear in some places on the anticline.

Gas at Two Levels

Gas has been found in two levels, the upper being in a shale under a black lime at approximately 200 feet below the base of the Kansas City formation, or at an average depth of about 250 feet below the surface, and the second and larger gas zone is found in a sand, that may be the Peru, at depths varying from 340 to 370 feet below the surface.

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Fairfax Airport, Kansas City, Mo., as it appeared in August, 1929, with the Missouri River and city in the background.

Attorney Eagleson Taught Three R's

Group Counsel for Columbia Gas & Electric Corp. Knows Old-Time Country School, for It Paid His Way Through College

By Thomas F. Smiley

Freeman T. Eagleson, of Columbus, Ohio, general attorney for the Columbus group of the Columbia Gas & Electric Corp. system, is a product of that period of rural life, now rapidly passing, when a young man frequently worked his way through college by alternating between teaching school and going to college. After receiving his own rudimentary education in the "Deep Cut" school, he himself taught at country schools designated by such names as "Mud Run," "Independence Hill," and "Center." A 2 or 3-mile walk in winter with the thermometer at zero didn't bother him.

Just the mention of names like that—"Deep Cut School," "Mud Run School"—sets many a mind tingling with memories of a little building containing a big coal stove and knife-hacked desks; of paper wads dextrously flipped at backs of sun-bronzed necks; of mysterious notes smuggled to waiting hands; of an upraised palm, a snap of the fingers and the eager query, "Please, may Jim and I go for a bucket of water?" And when the two urchins returned carrying the pail between them, another appeal, "Please, may I pass the water?" And then the bucket carried along the aisles, each boy and girl drinking copiously and unafraid from the one tin cup.

Germs? Why, man, there weren't any germs in those days. Anyway, what man who attended the old-time district school doesn't cherish the memory of a girl whom he worshiped there? And what man wouldn't like to have another opportunity to drink from the old rust-specked tin cup which her lips hallowed? Bring on your germs—but let the girl come too.

Well, That's Enough About Germs

But here, here, this wasn't to be a dissertation on germs or on the memories of a star-eyed girl of long ago. It was to be something about Freeman T. Eagleson, attorney, educator, law-maker, and student of public utility legislation, particularly as it relates to the natural gas and electric industry. A reference to the country school of other years is likely to get any fellow off the track for a moment though.

It was as teacher in that kind of school that Mr. Eagleson earned most of the money with which he paid his way through Muskingum College in New Concord, Ohio, and the law school of Ohio State University, Columbus. He was born on a farm near Cambridge, county seat of Guernsey County, in 1876; attended first the district school, and then high school in the village of Washington near by. Even before he had graduated from high school he began teaching in the district schools of the neighborhood. His last work in this field was as principal of the Salesville, Ohio, schools.

Upon completion of his law course and admission to the practice of law in Ohio, in 1903, Mr. Eagleson became associated with the firm of Lock & Turnbaugh, Cambridge, Ohio, which firm represented the Cambridge Power & Light Co. Thus early began his contact with a phase of legal work which was to receive more and more of his attention with the passing years. From the outset he experienced a deep interest in public affairs and legislation.

Elected to Legislature

Mr. Eagleson was elected to the Ohio House of Representatives from Guernsey County in 1903 and was re-elected at the expiration of his term in 1905. In 1906 he was Republican floor leader and speaker pro tem. In 1908 he was speaker, the youngest that Ohio had up to that time.

Mr. Eagleson was active in the recodification of Ohio's insurance laws and helped to draft Ohio's Railroad Commission Act of 1906, amended in 1911 to include public utilities. In 1909 and 1910 Mr. Eagleson served as first special counsel to the attorney general of Ohio. In 1912 he was the Republican candidate for attorney general, but along with other men on the regular Republican ticket, he suffered defeat as a result of the split in the party occasioned by the "Bull Moose" movement.

Early in 1913 Mr. Eagleson moved to Akron to become counsel for two years for the Northern Ohio Traction & Light Co., after which he moved to Columbus and thus began the realization of a long held wish to practice law in Ohio's capital city.

Although always ready to discuss a book or a baseball game, a constitutional amendment or a good dinner, Mr. Eagleson becomes uncommunicative when conversation is turned in his own direction, with the result that anybody who sets out to obtain personal facts about him faces a long and rather difficult task. It took a lot of questioning to find out how his first contact with the Ohio Fuel Supply Co. came about.

Joins Mr. Gerard

In 1917 John M. Gerard, general manager of the company, asked him by telephone if he could come over to the gas office as he would like to see him. The answer was, "I will be right over." Upon the lawyer's arrival, Mr. Gerard advised him that the general counsel for the company, L. B. Denning, Columbus, Ohio, was changing his position to the principal offices of the company in Pittsburgh, Pa., and asked if Mr. Eagleson was in a position to enter the service of the Ohio Fuel Supply Co.

Mr. Eagleson promptly accepted the invitation to become associated with Mr. Gerard and his company. His high regard for Mr. Gerard and his associates, he says, has increased with time. He declares Mr. Gerard is one of the best loved men in the public utility field and that after all his years as an executive in a great public utility organization he has the friendship and love of everyone who has worked under him and the respect and confidence of the public which he has served.

Mr. Eagleson has reached some conclusions concerning the natural gas industry during his years in it. One of these relates to the rates allowed under the law.

Rate-Fixing Law Unjust

"I think the law fixing rates for natural gas wrong in that it is based on the value of the company's property used and useful," said Mr. Eagleson. "That method of arriving at a rate may be all right for electric light and power plants and for water plants; but it is unjust to the natural gas industry, which is a mining venture, with the hazards that go with such a venture. Its product is not manufactured, but it is discovered. When discovered and marketed, the consumer should pay the reasonable value of that commodity. Until the gas companies are permitted to include in their rate base and earn thereon a reasonable rate of return upon the value of their gas in place, in both operated acreage and such additional acreage as in the sound discretion of the executive officers should be carried as a reserve, the public will be paying less than reasonable value for natural gas service."

Mr. Eagleson married Miss Jessie Neely, daughter of the late Lemon G. Neely, an extensive gas and oil operator. They and their three sons reside in Bexley, a suburb of Columbus. Mr. Eagleson is a thirty-second degree Mason and a member of the Columbus Club, the Columbus Athletic Club and the Scioto Country Club. He is a member of the official board of the Broad Street Methodist Episcopal Church of Columbus and he is president of the Muskingum College Alumni Association of Franklin County.

Some manual labor is good for any boy or man, according to Mr. Eagleson, who deplores the softening tendency of modern ways of living. From boyhood he has taken a lively interest in athletics. He himself was a good baseball pitcher and a fair boxer. He plays golf, but is noncommittal as to his proficiency.

In boxing Mr. Eagleson discerned the value of the maxim, "Follow through."

Found It Good Rule Everywhere

"It's a rule that holds good in everything you undertake," said Mr. Eagleson. "No matter whether it's boxing, golf, writing a brief, or arguing a case in court. It's the follow through that brings success. Jim Corbett was perhaps the best boxer who ever put on a glove, but he sacrificed the follow through for speed. Jim Jeffries didn't rely on the number of blows he landed, but on the weight with which he planted them. And that's what counts in any line of work."

The readiness with which Mr. Eagleson turns to boxing for an apt illustration is indicative of the interest he always has felt in this sport. "Boxing is wonderful discipline for both the mind and the body," he said.

Mr. Eagleson chuckled when he was asked how he earned his first money. "The fact is," he said, "my first experience as a wage earner was not altogether encouraging. When I was just a young boy a neighboring farmer hired me to work in a hay field. I put in eight hours, from noon until 8 o'clock that evening, hauling haycocks with the help of a horse and a long chain. My employer didn't say a word about remuneration afterward, and I didn't like to mention it. According to the standards of that locality I should have received 50 cents. Well, one day three months later, I was at the county fair, and I felt urgent need of extra money for peanuts, ice cream, candy, the merry-go-round, to see the bull, etc. Happening to meet this man among the crowds, I screwed up courage to ask him if he cared to pay me for that afternoon's work. After deliberation he drew a dime from his pocket and handed it to me. That dime was the first outside money I ever earned. But do you know, to this day I feel somehow that I was underpaid."

Mr. Eagleson for years has been an active member of the Natural Gas Association of America, having served as director of that organization and also of the Ohio Gas and Oil Men's Association.

PLEASANT THINGS TO RECALL, ANYWAY

What has become of the young man who worked his way through college by teaching school? Many of the older oil men recall the student-teacher who once had so important a place in rural school life. Not a few college educated men who have attained high places in the oil industry, either along professional lines or as executives, paid their way by the one-time popular method of teaching one year and going to college the next.

Freeman T. Eagleson

The number of young men now employing this mode of self help is negligible, although the number working their way through school in some way is larger than ever before. What has happened? At least three things:

Disappearance of the little red schoolhouse, more stringent educational requirements imposed upon teachers, and better pay for other kinds of work.

The modest country schoolhouse has given way to an imposing structure containing modern scientific devices contributing to sanitary conditions and efficient teaching. Instead of being classified as "in the first reader," "in the second reader," etc., pupils are rated with the mechanical precision of the fruit grower grading his oranges.

Teachers, instead of undergoing a somewhat perfunctory questioning in rudimentary subjects, must have attended a training school and submitted to a rigorous examination.

The boy who must work his way through school can do it in a score of ways better than by teaching school.

All of which is just another manifestation of the great god Progress. Inexorable, ruthless, all-conquering Progress, to which nothing is sacred. Oh, probably it's all right. But there's one thing they can't take away from us, and that's our memories.

Peru Discovery Almost Old as Drake's

First Well Drilled Only Three Years Later. Remarkable Development of Field by International Petroleum Co.

Specially Contributed

When travelers aboard a northbound steamer skirting the barren western coast of South America approach the northern boundary of Peru, they see off to the starboard one, and then several, oil derricks which stand like lighthouses on top of the cliff. When, later, the steamer anchors for a few hours off the port of Talara, word passes along the deck that here is the center of the Peruvian oil industry, the oldest in South America, which dates back to the time of the American Civil War and that the first well, a few miles to the north, followed the Drake well by only three years.

At Talara is located the refinery of the International Petroleum Co., Ltd., which, aside from the concessions subsequently acquired, is the owner of the old concession, "La Brea and Parinas." The history of this concession goes back for more than two centuries to 1692 when the Spanish Crown conceded the petroliferous territory to Captain Martin Alonzo Grandino. From 1692 to 1705, that portion of the concession between the Tumbes and Chira Rivers was held by Juan Benito de las Heras who, in the final year of the period, transferred the title to the hospital of Piura. In 1815, Diego de Lama purchased the superficial rights to the property from the hospital and in 1827 he acquired from Antonio de Quintana the rights to the oil seepage within the boundaries of the property. Don Quintana had acquired these rights during the preceding year from the Peruvian government in lieu of the payment of 4,974 pesos which was due him from the Peruvian treasury.

Diego de Lama divided the property into 13 shares, one of which he gave to each of his 13 sons. That part known as "La Brea and Parinas" was inherited by Josephine de Lama upon the death of her father, one of the 13 sons. In 1878, she sold the property to Genaro Helguero and he, in turn, on February 3, 1888 transferred the property to W. H. C. Tweddle. Development of the property had been started by a Peruvian firm in 1874 and one of the wells at a depth of 330 feet had an initial daily production of 400 bbls. Mr. Tweddle was successful in further drilling and in September, 1889, he transferred the mineral rights to the London & Pacific Petroleum Co., Ltd., registered on August 8, 1889. The London & Pacific Petroleum Co., Ltd. was successful in its drilling and later built a small refinery at Talara.

Acquired by International

On September 14, 1914, the company came under the control of the International Petroleum Co., Ltd., which was organized in Ontario, Canada, on September 10, 1914, to acquire control of the London & Pacific Co., the Lagunites Oil Co., Ltd. and the West Coast Oil Fuel Co., Ltd. Complete control of these companies was acquired in 1916 by the International Petroleum and, on May 1 of that year, the London & Pacific Co. was liquidated. The capacity of the refinery at Talara had been increased gradually from its original capacity of 1,500 bbls. daily to more than 5,000 bbls. daily at the time of its acquisition by the International. Under the latter's ownership, the capacity continued to increase to approximately 8,500 bbls. in 1922; 11,500 bbls. in 1925; 13,000 bbls. in 1927; and in 1928 to its present capacity of approximately 15,700 bbls. daily.

Although the throughput of the International refinery at Talara amounts to 98.5 per cent of the total crude oil refined in Peru, the refinery operated by the Establecimiento Industrial de Petroleo de Zorritos probably antedates that at Talara. The Zorritos refinery depends entirely upon the crude from its own production in the Zorritos Field and, although it has a rated capacity of 1,000 bbls. daily, for a number of years its daily throughput has been only slightly more than 200 bbls., the average for 1928 being 218 bbls. The Zorritos Field also comes within the original Diego de Lama property and credit is given to him for having, in 1862, brought in at Zorritos the first Peruvian well. The refinery is equipped with three "batch" stills and a still of Scotch style for the rectification of crude naphtha. The third oil company in Peru, the Lobitos Oil Co., does not operate a refinery and disposes of the bulk of its crude production through export.

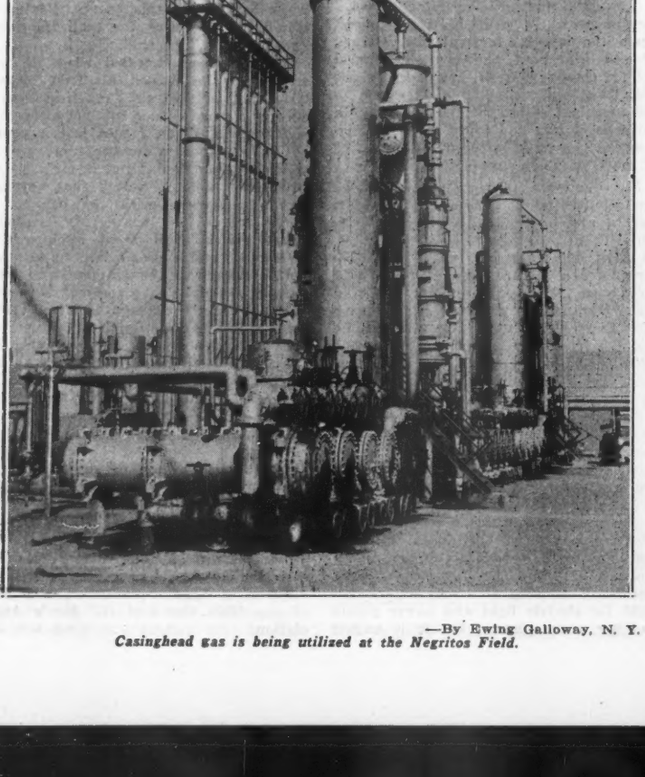
Development of Refining

From 1920 to 1923, the major light product of the International refinery was crude naphtha, which was exported for further refining to a number of countries, but particularly to Argentina, the United States and Canada. In 1923, the output of crude naphtha reached a total of 1,110,622 bbls., or 32.34 per cent of the crude run, while the gasoline output amounted to only 209,181 bbls., or 7 per cent of the crude throughput. Beginning with 1924, the percentage of gasoline recovery began to increase and that of crude naphtha output to decline. In that year, the gasoline production was 18.36 per cent of the crude throughput, with crude naphtha at 17.12 per cent. In 1925, gasoline recovery had increased to 22.60 per cent and crude naphtha output declined further to 13.29 per cent. The margin became greater in 1926, when the operation of cracking units was started, and the gasoline output increased to 23.95 per cent and that of crude naphtha declined to 11.85 per cent.

The full effect of the cracking units was not felt until 1927, during which year the production of gasoline climbed to 43.90 per cent of the crude throughput and the output of crude naphtha dropped to 0.31 per cent, the output of the latter product being marketed locally as a tractor fuel. In 1928, gasoline recovery averaged 43.33 per cent, with crude naphtha in the same proportion as in 1927. The figures used in computing these percentages and those for the refinery output of gasoline in the accom-

(Continued on Page 213)

INTERNATIONAL'S OPERATIONS IN PERU



—By Ewing Galloway, N. Y.

Casinghead gas is being utilized at the Negritos Field.

LARGEST BUYERS OF AMERICAN OIL INDUSTRY EQUIPMENT

Venezuela, Netherlands West Indies, Rumania, and Argentina were the largest buyers of United States oil well and refinery machinery and apparatus, according to a compilation of export totals for the year made by the Industrial Machinery Division of the Department of Commerce. Exports for the year, in dollars, aggregated $8,118,479 for well drilling apparatus and $8,074,325 for other oil well and oil refinery machinery.

Soviet Russia during 1928 took slightly more than $1,050,000 worth of these materials from the United States, but 1929 figures, when available, are expected to show a very material increase in Russian buying of American oil equipment. The Soviet oil industry is now undergoing a wide expansion in both producing and refining branches, and much of the equipment needed in this expansion program has been purchased in the United States during 1929, with further extensive buying looked for during 1930 and 1931.

Exports of oil field and refinery equipment from the United States to all countries during 1928 were as follows:

Exported to—	Oil well and oil refinery machinery: 7,341 well drilling apparatus	7,439 other oil well and oil refinery machinery
Austria	.....	.....
Azores and Madeira Islands	.....	.....
Belgium	6,131	759
Czechoslovakia	1,000	.....
Denmark	206	162
Finland	2,468	556
France	13,675	4,715
Germany	2,650	4,942
Greece	5,726	5,932
Hungary	.....	.....
Irish Free State	.....	.....
Italy	10,230	73,925
Malta, Gozo, and Cyprus	12,949	.....
Netherlands	5,903	23,922
Norway	.....	462
Poland and Danzig	12,186	14,465
Portugal	.....	.....
Rumania	655,869	895,311
Soviet Russia in Europe	425,853	636,371
Spain	9,365	1,462
Sweden	.....	259
Switzerland	.....	.....
United Kingdom	147,482	181,421
Yugoslavia and Albania	.....	.....
Canada	421,814	262,431
British Honduras	.....	.....
Costa Rica	.....	2,792
Guatemala	8,813	1,133
Honduras	131	171
Nicaragua	.....	2,014
Panama	18,912	1,376
Salvador	5,546	7,422
Greenland	.....	.....
Mexico	413,713	568,365
Miquelon and St. Pierre Islands	.....	.....
Newfoundland and Labrador	3,998	.....
Bermudas	.....	.....
Barbados	184	1,134
Jamaica	332	.....
Trinidad and Tobago	189,137	172,067
Other British West Indies	57	1,523
Cuba	21,691	4,904
Dominican Republic	2,747	473
Netherland West Indies	44,178	138,324
French West Indies	.....	.....
Haiti, Republic of	4,997	455
Virgin Islands of United States	817	.....
Argentina	579,710	791,135
Bolivia	7,332	.....
Brazil	82,060	79,263
Chile	4,807	2,021
Colombia	314,877	578,316
Ecuador	166,945	32,491
British Guiana	50	1,597
Surinam	.....	2,498
Paraguay	.....	1,167
Peru	81,579	163,139
Uruguay	3,502	16,420
Venezuela	1,849,260	1,998,504
Aden	.....	.....
Arabia	.....	.....
British India	350,409	225,132
British Malay	203,973	77,661
Ceylon	.....	1,181
China	1,848	1,230
Java and Madura	287,594	276,165
Other Netherland East Indies	1,193,887	663,835
French Indo-China	.....	.....
Hong Kong	12,564	8,710
Iraq	27,494	8,700
Japan	8,578	37,963
Kwantung	.....	2,250
Palestine	.....	.....
Persia	159,982	1,503
Philippine Islands	3,860	10,355
Siam	.....	.....
Soviet Russia in Asia	37,016	14,980
Syria	241	129
Turkey	.....	398
Australia	87,141	5,094
British Oceania	.....	.....
French Oceania	.....	.....
New Zealand	3,278	782
Belgian Congo	.....	.....
British East Africa	15,013	186
Union of South Africa	141,990	10,474
Other British So. Africa	3,504	.....
British West Africa	6,272	7,442
Egypt	20,845	17,532
Algeria and Tunisia	2,336	250
Other French Africa	.....	.....
Italian Africa	.....	.....
Liberia	.....	.....
Morocco	1,809	.....
Mozambique	10,194	16,064
Other Portuguese Africa	160	.....
Canary Islands	.....	.....
Total	$8,118,479	$8,074,325

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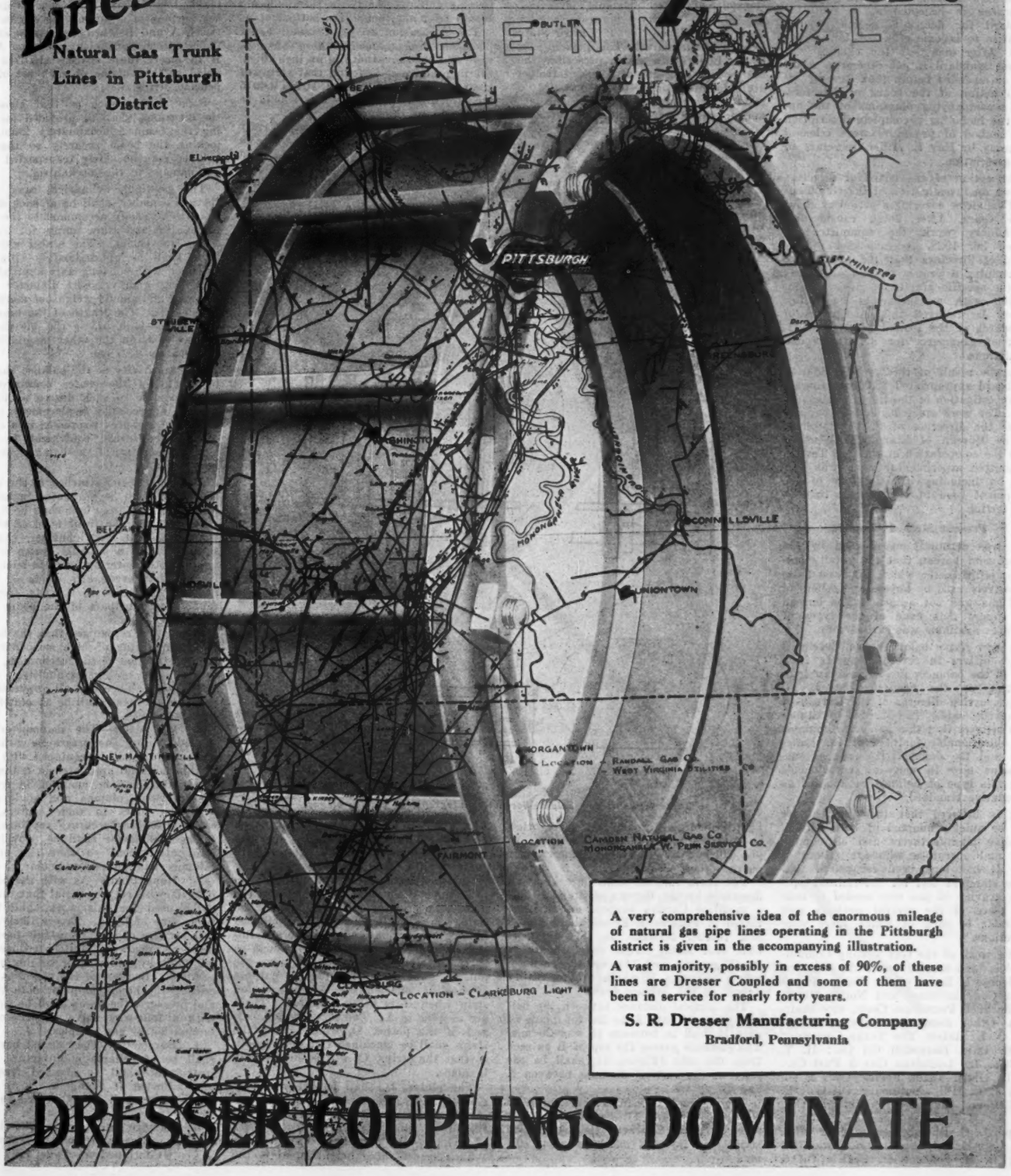
A Vast Majority of these Lines are DRESSER Coupled!



A very comprehensive idea of the enormous mileage of natural gas pipe lines operating in the Pittsburgh district is given in the accompanying illustration.

A vast majority, possibly in excess of 90%, of these lines are Dresser Coupled and some of them have been in service for nearly forty years.

S. R. Dresser Manufacturing Company
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DRESSER COUPLINGS DOMINATE

Adopt New Specific Gravity Balance

Natural Gasoline Association Adopts New Type Approved by Bureau of Standards. Describe Apparatus and Testing Procedure

By C. O. Willson

The board of directors of the Natural Gasoline Association of America at a meeting held in Tulsa last week formally approved the specifications for a new specific gravity balance for gases. In line with the recommendations of the association's Gas Testing Committee the new apparatus is accepted as a tentative standard for determining gas specific gravities to become effective January 1, 1930. After one year the balance will become standard if not otherwise modified or amended before that time by official action of the board of directors. The accompanying diagrams of the apparatus including a complete description and method of procedure were released Saturday by Ray E. Miller, secretary of the association.

The action of the board of directors follows an investigation of the Gas Testing Committee covering a period of about three years. After doing considerable preliminary work the committee on March 26, 1928, recommended to the board of directors that the problem of determining a proper method of testing for the specific gravity of gases in connection with measurements by orifice meters be referred to the Bureau of Standards of the United States Department of Commerce for definite recommendations.

As the result of this recommendation the board appropriated $3,000 to finance the investigation of the Bureau of Standards. The work started about a year ago under the direction of S. F. Pickering of the Bureau of Standards. Working with the co-operation of the Gas Testing Committee experimental work was carried on including investigations of the equipment used at the present time in gas testing.

Present Method Obsolete

It was definitely ascertained by the government bureau that the gravity bottle or effusiometer which has been quite extensively used by buyers and sellers of field gas was not accurate. The bureau also found that none of the types of balances available was satisfactory.

A new type balance was developed which differs in several respects from any of the balances now in use. In commenting on the new balance, L. G. Briggs, acting director of the Bureau of Standards, said, "The Bureau of Standards believes that this balance eliminates the objectionable features of the knife-edge and the double strip type of suspensions now in use and recommends that this type of balance be adopted as a tentative standard."

It is believed that the new balance will be quickly adopted by both natural gasoline manufacturers and oil companies and operators who are sellers of gas. It has long been recognized that some standard test for determining specific gravity of gas was needed to take the place of the several methods now available to each of which there were objections.

The work of the Gas Testing Committee has been carried under the direction of George P. Bunn, of the Phillips Petroleum Co., chairman, and Norris Plank, of the Shell Petroleum Corp., vice chairman. Other members of the committee are C. L. Baker, The Texas Company; J. E. Dale, Barnsdall Oil Co.; H. T. Griffin, Jr., Louisiana Gas & Fuel Co.; D. B. Hiatt, Texas Pacific Coal & Oil Co.; J. L. Hill, Continental Oil Co.; E. C. LeFevre, Empire Oil & Refining Co.; P. S. Magruder, General Petroleum Corp.; L. G. Rheinberger, Sinclair Oil & Gas Co.; E. F. Schmidt, Lone Star Gas Co.; E. H. Schoenfeldt, Prairie Oil & Gas Co.; George A. Shaner, Carter Oil Co., and J. M. Vaiden, Skelly Oil Co.

Following is a description of the apparatus and its application in testing:

Foreword

The specific gravity of gases shall be determined by means of a gas balance constructed, as to principle, similar to the Edwards gravity balance described in Technologic Paper No. 89, United States Bureau of Standards. This principle embodies Boyle's law which prescribes that the density of a gas at constant temperature is proportional to its pressure; or restating this law as quoted in the technologic paper referred to, "the densities of two gases at normal pressures are in inverse ratio to the pressures when of equal buoyant force."

A. Description of Apparatus

1. Balance—The balance to be used shall consist essentially of a balance beam with its supporting fulcrum mounted inside a gas-tight, cylindrical metal case. The balance beam shall have a light, sealed globe, made of a substantially inflexible material, attached rigidly to one end and an adjustable counterweight on the other.

The beam fulcrum shall be a support, described by the Bureau of Standards as a modified Cardan suspension, as illustrated in Figures 1, 11 and 111, and as now further defined. In this construction, four metal strips, fixed rigidly at A, (Figures 1 and 11), are attached securely to parts B which are in reality a part of the balance beam.

The vertical distance between the bottom plane of part A to the top plane of part B shall be between 18 and 20 mm. The distance across the top of B as seen from the side (Figure 1), shall be the same as the vertical distance between A and B.

The horizontal distance, as seen from the side, (Figure 1), across the lower face of part A where the suspension strips are fastened shall be about 0.1 mm.

Since this suspension acts as though the center of motion is on a horizontal line passing through the bottom of A, as seen in Figure 11, the center of gravity of the beam including the center counterweight G should be on this line. Therefore, the horizontal line H, (Figure 11), passing through the center of the beam should be 2 mm. below the bottom of A.

The suspension strips, C, shall be of phosphor bronze, one-eighth of an inch wide and one-thousandth of an inch thick. (If in practice it is found that strips of greater strength are desired, strips 0.0015 inch thick may be used. This should be the maximum thickness.)

A small pin, K, shall be permanently fastened in B at each point where a strip, C, is clamped. Each pin should be approximately perpendicular to the face in which it is fastened and should be located near the lower end of the vertical line passing through the center of the lower plate D. Each of these fastening plates, D, on B, are provided with a hole into which the pin projects. The hole in the plate, D, on the side facing B should be slightly countersunk in order to allow for any burr which may be around the hole punched in the strip and which otherwise would prevent the plate from pressing uniformly against the strip, C. A small hole shall be punched in each suspension strip, C, several millimeters from the end just large enough so that the strip may easily fit over the pin, K. These pins are for the purpose of holding one end of the suspension strip when it is being mounted. There are no pins in A. The faces of A and B and of the plates, D, which clamp the strips shall be machined flat and smooth so that the strips, C, will be held firmly in place.

The plates, D, shall be held tight by means of two screws each. These screws shall be of such size that they may be turned up quite tightly without danger of stripping the threads or breaking off.

Two spacers of a height equal to the selected vertical distance (18 to 20 mm.) between the lower plane of A and the upper plane of B are to be provided with each balance, with a place to hold them when not in use. These spacers should be in the nature of pins of round cross section and the two should be machined to identical length. The spacers are for the purpose of adjusting the distance between A and B when new strips are being mounted. Sufficient space on A and B to insert these spacers shall be provided at the outside of each set of suspension strips.

Some device, such as that shown in the diagrams, shall be provided for raising the beam approximately 2mm. and locking the beam securely so that the balance may be safely transported without damage to the mechanism.

The gas-tight, cylindrical case, called the gas chamber, shall be of such dimensions as to easily accommodate the beam mechanism and allow amply for its necessary movement. The sealed globe, or bulb, shall be approximately ellipsoidal in shape with its long axis approximately 20 cm. and its short diameter about 12.5 cm. and should weigh not more than 1.5 pounds. The length of the beam, including the bulb, M, on the one end and the scale, J, on the other should be approximately 48.5 cm.

The sensitivity of the balance shall be, by means of the center counterweight, G, adjustable to such degree as to permit an appreciable displacement of the beam for pressures, expressed in a change of mercury levels, equivalent to 0.500 mm. in each arm of the balance manometer.

The beam scale, attached to the end of the beam, shall be graduated in millimeters and a fine cross hair shall be fixed as a reference in the front head of the gas chamber. The gas chamber shall be equipped with a suitable device for distributing the entering gases in such manner as to prevent any solids or liquid droplets, entrained in the gas, from impinging on any part of the beam mechanism.

It must be recognized that the balance is an apparatus of high sensitivity and the construction of the mechanism, therefore must be of highest quality.

The gas balance and all appurtenances used for this test shall be absolutely free from leakage.

2. Manometer—The manometer used in determining gas pressures within the gas chamber shall be equipped with scales of thin material graduated in millimeters. The scales shall be mounted in front of the mercury columns and shall extend over the tubes to their centers, thus easily affording accurate readings.

The manometer shall be provided for rigid attachment so that the mercury columns will be perpendicular.

3. Hand Pump—As with the balance, it is likewise very essential that the hand pump used for this work shall be entirely free of leaks. Errors likely to result because of leakage in this particular piece of apparatus shall be reduced to a minimum by soldering or tinning all connections. Because of the necessity of operating the hand pump for both vacuum and pressure, the pump shall be equipped with a four-way valve to prevent contamination of gas samples.

4. Barometer—The aneroid barometer shall be of reliable manufacture. This instrument shall be checked frequently and adjusted if found to be in error. Barometers shall be calibrated in millimeters.

5. Balance Mounting—The balance may be operated from any substantial

(Continued on Page 174)

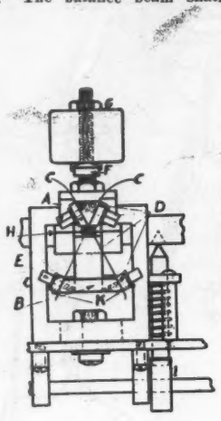

Fig 1

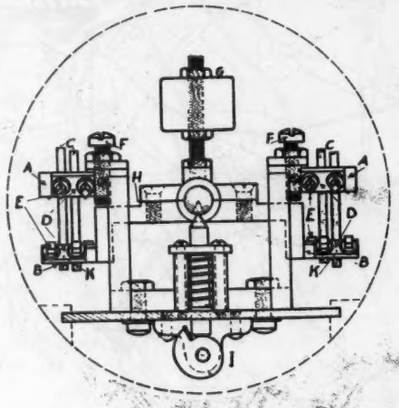

Fig 2

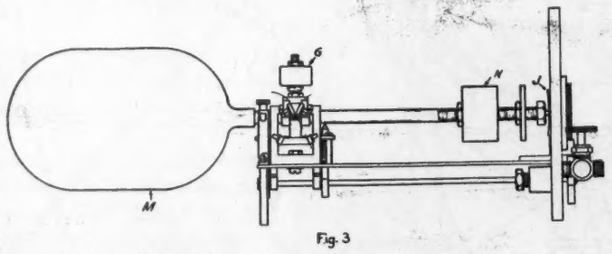

Fig. 3

Three views of new balance for determining specific gravity of gas.

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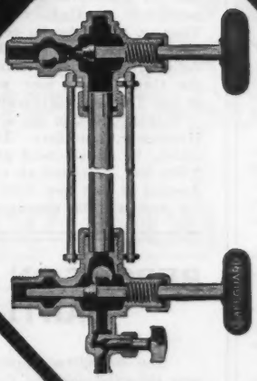
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PRORATION IN OKLAHOMA WILL CONTINUE THROUGH THE WINTER

OKLAHOMA CITY, Okla., Dec. 23.—The Oklahoma Corporation Commission issued an order today continuing the proration of the flush fields of Oklahoma in January, February and March, 1930. Wirt Franklin, president of the Wirt Franklin Petroleum Corp., appeared on behalf of the producers of Oklahoma in a petition for a continuance of proration.

The petition was granted immediately following the presentation of the petition, which pointed out the need for curtailment of the potential production of the State which is greatly in excess of refinery requirements of Oklahoma crude oil.

According to the order issued by the commission, the Oklahoma City Field will be curtailed 40 per cent in January and February and 50 per cent in March; East Earlsboro 40 per cent in January and February and 50 per cent in March, and the remainder of the Greater Seminole area, including St. Louis-Pearson, Sasakwa, Allen deep sand, Asher and the Seminole Field proper, which includes Seminole City, East Seminole, Earlsboro, Bowlegs, Little River, East Little River, Maud, Mission and Searight, and the Logan County Field, 20 per cent throughout the three-month period.

It is hoped by the petitioner and the producers he represents that under the proration order production in Oklahoma will be kept down to refinery requirements, and the production estimate is placed at 641,000 bbls. per day in January, 670,000 bbls. per day in February and 671,600 bbls. in March, a 90-day average of 660,770 bbls. per day.

To establish equality between producing and drilling wells, each well now drilling in any of the prorated areas or which may be commenced prior to March 31, 1930, shall take a delay prior to being brought into production equal to the accumulated shut-in time and accumulated equivalent time resulting from pinching of producing wells, from the beginning of the proration period in each pool, which in the case of the Oklahoma City Pool shall be September 12 and in the case of the East Earlsboro Pool shall be September 28, 1929, and in all the other pools in question October 16, 1929, said period of delay to be computed in

(Continued on Page 216)

THE OIL MAN'S CALENDAR

January 4-11—New York, National Automobile Show, Grand Central Palace.

January 7-10—New York, meeting, American Railway Association. Subcommittee on Tank Car Specifications, 30 Vesey Street.

January 9—New York, meeting, American Petroleum Institute, Board of Directors, institute headquarters.

January 11-16—Atlantic City, N. J., convention and twenty-seventh annual Road Show, American Roadbuilders Association, Auditorium.

January 14—Miami, Fla., aeronautic meeting, Society of Automotive Engineers.

January 19-25—Chicago, National Oil Show, Hotel Sherman.

January 20-24—Detroit, Mich., annual meeting, Society of Automotive Engineers, Book-Cadillac Hotel.

January 22-24—Boston, Mass., Independent Oil Men's Association of New England, American House.

January 23-24—Oklahoma City, Okla., Oklahoma Oil Jobbers Association, Huckins Hotel.

January '25-February 1—Chicago, National Auto Show, Coliseum.

January 27-31—Philadelphia, International Heating and Ventilating Exposition, Commercial Museum.

January 28-29—Milwaukee, Wis., Wisconsin Petroleum Association, Hotel Pfister.

January 30-31—Baltimore, Md., regular meeting American Society for Testing Material, Lord Baltimore Hotel.

February 11-12—Des Moines, Iowa, Iowa Petroleum Association, Fort Des Moines Hotel.

February 19-21 — Columbus, Ohio, Ohio Petroleum Marketers Association, Deshler-Warwick Hotel.

March 10-12—Shreveport, La., convention, Western Petroleum Refiners Association.

March 19-21—Detroit, convention, Michigan Oil Men's Association, Statler Hotel.

March 20-22—New Orleans, La., American Association of Petroleum Geologists, Roosevelt Hotel.

April 5—New York, 50th Anniversary Celebration, American Society of Mechanical Engineers.

April 5-13—Detroit, All American Aircraft Show.

April 7-12—Chicago, annual meeting, American Oil Burner Association, Stevens Hotel.

Late Fields

GULF COAST

HOUSTON, Tex., Dec. 24.—Gulf Production Co. further proved the prolific possibilities of its Fannette Dome in Jefferson County by another 3,000-bbl. producer completed Sunday. This well, No. 4 Burrell, flowing through two half-inch chokes from a sand slightly below 4,200 feet, is approximately 800 feet to the northeast of Gulf company's No. 12 Thomas, which by its completion several months ago flowing 3,600 bbls. daily, definitely established Fannette as one of the Gulf Coast's best potential sources of oil. The oil is 31 gravity.

Gulf Production Co.'s No. 3 Boyt, at Hankamer, southern Liberty County, which, in an oil sand at approximately 3,700 feet, promised an extension of production at that new field, tested salt water and will be deepened. This well is around 200 feet to the south of No. 2 Boyt, which several months ago blew out from about the same level making an estimated 15,000 bbls. of salt water daily with 30,000,000 feet of gas. The latter well later was plugged to 2,925 feet where it made a 500-bbl. producer for the field.

Another good well completed over the week-end was Gulf Production Co.'s No. 38 Davis at Big Creek which as a former producer deepened to approximately 4,290 feet flowed initially at an estimated rate of 3,000 bbls. of pipe line oil daily through a three-quarter inch choke with pressure of 225 pounds. This is an offset to The Texas Company's No. 4 fee, completed several weeks ago flowing initially at the rate of 9,000 bbls. daily and which still is making 2,500 bbls. net oil.

High Spots in Field News

EAST CENTRAL TEXAS

Pipe line carrying oil to Gulf from Van Pool.

ROCKY MOUNTAIN AREA

Continental company's well east of Lea Pool starts flowing 500 bbls. daily.

SOUTHWEST TEXAS

Magnolia company completes two Darst Creek wells, one flowing 400 bbls. and other 475 bbls.

NORTH TEXAS

Proration planned in Gray County. Additional pipe lines being constructed. Crude runs reduced.

WEST TEXAS

Sulphur water in Andres County test. Well looks good for 165 bbls. Good show in Menard County.

KANSAS

Voshell and Ritz pools, under proration, have potential of 14,000 bbls. Possible new pool in Sumner County.

OKLAHOMA

Oklahoma's potential increasing. State could produce 1,035,000 bbls. in one day, but is held back to 635,000 bbls.

NORTH LOUISIANA-ARKANSAS

Old Carterville gas well deepened blew in flowing 60 bbls. 40 gravity oil from 5 feet of sand, total depth 3,130 feet.

Small wildcat producer in Lawson-Urbana district, Union County, Arkansas.

Zwolle test proves somewhat disappointing. Will drill deeper.

GULF COAST

Gulf company completes 3,000 bbl. producer at Fannette Dome, Jefferson County, further proving the field.

At Hankamer, Southern Liberty County, Gulf company's test will be deepened after testing salt water.

Gulf company also had a 3,000-bbl. well at Big Creek, an offset to the 9,000-bbl. initial well of The Texas Company which is still making 2,500 bbls.

CALIFORNIA

Santa Fe Springs operators failed to ratify proposal to limit number of wells eligible for completion during next 60 days, but will continue to curtail production in accordance with present agreement. Major companies and many of independents agree to restrict their output and produce less than allowable quota if necessary to keep down production.

Material decline in production shown for November.

REPORT ON FATAL EXPLOSION AT BARTLESVILLE EXPECTED FRIDAY

The committee appointed to investigate the explosion and fire at the United States Bureau of Mines experimental oil rig in Bartlesville, Okla., December 13, when R. R. Brandenthaler and Meredith A. Miles lost their lives, is expected to draft its report when it reconvenes Friday, December 27, to review the data obtained. Mr. Brandenthaler, senior petroleum engineer at the Bartlesville station, was killed almost instantly. Mr. Miles, junior petroleum engineer, died a few hours later. Gustav Wade, dynamometer engineer, and R. E. Holt, mechanic, suffered severe burns. The experimental rig was wrecked. The committee to investigate the accident was appointed at the direction of Scott Turner, director of the Bureau of Mines in Washington, D. C. Its first meeting was held on December 20.

The members of the committee, representing the Bureau of Mines, the State of Oklahoma and the oil and gas industry, follow:

United States Bureau of Mines—H. C. Fowler, acting chief engineer, petroleum and natural gas division, Washington, D. C.; N. A. C. Smith, superintendent petroleum experiment station, Bartlesville; W. P. Yant, gas chemist in charge of the Health Laboratory, Pittsburgh, Pa.

State of Oklahoma—W. E. Murphy, state labor commissioner; W. J. Armstrong, chief oil and gas conservation officers; J. Newton, state boiler inspector, all of Oklahoma City.

Oil and gas industry—C. E. Beecher of the Empire companies, Bartlesville, representing the American Petroleum Institute; T. R. Weymouth, Oklahoma Natural Gas Corp., Tulsa, representing the natural gas department of the American Gas Association; James O. Lewis, Dunn-Lewis Co., of Tulsa, representing the American Institute of Mining and Metallurgical Engineers. W. L. Hendee is an alternate for Mr. Weymouth.

At the first meeting of the committee J. O. Lewis was elected chairman. It devoted most of two days at the Petroleum Experiment Station making a study of the situation and interviewing various members of the station's staff and others who had knowledge of the equipment in which the explosion occurred.

Owing to the large amount of work involved, two subcommittees were appointed to study various phases of the problem. The subcommittee will make their reports this week. Their reports, after being reviewed by the main committee, will be incorporated into a complete report which will be transmitted to the director of the Bureau of Mines in Washington.

CALIFORNIA

LOS ANGELES, Calif, Dec. 24.—Santa Fe Springs operators failed to ratify the proposal to limit the number of wells which would be eligible for completion during the next 60 days but will continue to curtail production in accordance with the agreement already in effect. All of the major companies and many of the independents have agreed to restrict their daily production and have pledged themselves to produce less than their allowable quota if this should prove necessary in order to keep field production down to the established maximum of 150,000 bbls. daily. In order to accomplish this objective some operators may find it necessary to kill one well in order

(Continued on Page 218)

A.P.I. DIRECTORS MEET JAN. 9

NEW YORK, Dec. 23.—The board of directors of the American Petroleum Institute will meet for the discussion of general business at Institute headquarters, 250 Park Avenue, on Thursday, January 9. The meeting will open at 10 a.m.

POSTPONE GAS WASTE HEARING

LOS ANGELES, Calif., Dec. 21.—Hearing scheduled to have been held in Superior Judge William Hazlett's court on the request for an order to show cause why injunction proceedings should not be instituted against Signal Hill operators for gas wastage in violation of the state gas law has been set ahead to January 21.

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Oklahoma's Potential Increasing

The State Could Produce 1,035,000 Bbls. in One Day but Is Held Back to 635,000 Bbls. New Big Wells

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

Oklahoma's largest gusher was opened Saturday morning for a five-day flow and made 1,042 bbls. the first 30 minutes. It is the Indian Territory Illuminating Oil Co.'s No. 1 Thomas Fuzzell, SW cor. SE SE, Section 13-11-3w, Oklahoma City Pool, which was completed some 30 days ago with an initial production of 43,557 bbls. It made 36,861 bbls. on the gauge of December 23, ending at 7 a.m.

It is estimated the potential production of the Oklahoma City Pool, based on recent completions, is 360,000 bbls. for a single day.

The production of the State for the week ending December 21, was about 635,000 bbls. which is a decline of 14,000 bbls. from the previous week.

Enormous Potential

It is estimated that if all the wells in Oklahoma were produced for a full 24 hours the State could produce 1,035,000 bbls. in one day. What the second day's figures would be is another story. The largest wells in the State, in the Oklahoma City Pool, are shut in and have never been given more than a 24-hour test. Some of them, in fact, have not been tested 24 hours. Whether or not they could produce as much on the second as on the first day is not known. Figuring on a single day's production it is estimated that at least 312,000 bbls. is shut in or held back in the Oklahoma City Pool; 50,000 bbls. is curtailed in the East Earlsboro Pool; 30,000 bbls. in other Seminole pools; 3,600 bbls. in Logan County; 700 bbls. in Asher; 2,000 bbls. in Sasakwa, and 2,000 bbls. in Allen.

Shut-In Production

The production of the wells now shut in after producing the first 24 hours in the Oklahoma City Pool is 201,002 bbls. Four new wells were added to the list last week. The initial production of the wells shut in is as follows:

Company, lease—	Well No.	Bbls.
I.T.I.O., Trosper	2	19,722
Mid-Kansas, Browning	1	11,575
Coline, Olds	2	4,689
I.T.I.O., Emerson-Joyce	1	100
I.T.I.O., N. Emerson	1	875
Mid-Kansas, Fortson	4	3,242
Mid-Kansas, Forteon	5	6,256
Sinclair, Kinter	2	7,565
Mid-Kansas, Mollman	1	1,500
Sinclair, School land	1	6,683
I.T.I.O., Fortson-Farley	2	42,584
I.T.I.O., Watters	2	1,420
Shell, Petty	5	65
Sinclair, Stamper	5	340
I.T.I.O., Trosper	3	8,620
Shell, Petty	4	700
Sinclair, Stamper	6	2,500
I.T.I.O., Verne	1	154
I.T.I.O., Verne	2	30,833
Skelly, Hoopes	1	*8,000
I.T.I.O., Speegle	1	1,298
Coline, Warren	2	25,454
Slick, Zecherle	1	†15,849
I.T.I.O., Peterson	1	‡1,027
Total	24	201,002

*6 hours and 15 minutes; †14 hours; ‡18 hours.

A Rich 3½ Acres

Two more producers were added to the Oklahoma City Field within the week. Tom Slick Oil Co.'s No. 1 Zecherle, NW cor. NE NE NE Section 13-11-3w, on a 3½-acre lease made 1,025 bbls. the first hour and 15,848 bbls. the first 14 hours, completely filling the stock tanks on the lease, and was then shut in. It produces from the Arbuckle lime at 6,100-6,555 feet. It extends the production one-half mile north on the east side of the pool. The well was also making between 50,000,000 and 60,000,000 feet of gas. It proved a much larger producer than was expected.

Two hours later the Indian Territory Illuminating Oil Co. and others' No. 1 S. Peterson, NE cor. SW Section 25-11-3w, blew in on the opposite side of the field and extended production one-half mile on the southwest side of the pool. The well is producing from the Detrital zone at 6,384-6,401 feet. The gas pressure was low and after being allowed to flow it made 40 bbls. the first hour and 59 bbls. the second hour and 1,027 bbls. in 18 hours. Some believe it has defined the southwest edge of the producing area in the Oklahoma City Pool.

The discovery well in the pool, the Indian Territory Illuminating Oil Co. and others' No. 1 fee, C SE SE Section 24-11-3w, was opened up in the past week and failed to flow. A gas lift will be installed. Same companies' No. 1 Foster, C NE SW Section 24-11-3w, also failed to flow when opened up.

The wildcats in the area surrounding the Oklahoma City Pool were drilling and fishing as follows: Prairie Oil & Gas Co.'s No. 1 Sudik, C NE NE Section 8-10-2w, Cleveland County, was drilling at 7,645 feet in hard lime on December 21. Tom Slick Oil Co.'s No. 1 Martin, NW cor. Section 13-13-1w, Oklahoma County, was drilling in lime which some call the Arbuckle at 6,939 feet. Magnolia Petroleum Co.'s No. 1 Noble, NW cor. SW SW Section 30-12-2w, several miles east of the main pool at Oklahoma City, was fishing at 6,844 feet.

Two Producing Zones

Two two producing horizons in the Oklahoma City Pool, are the Arbuckle lime and the Detrital sand zone. The contact between the Detrital sand and the Simpson sand is indistinguishable where the Detrital rests on the bevel edge of the Simpson formation. For this reason it is best to consider it as one zone. Wells drilled off structure encountering the full section below the Pennsylvanian have a definite thickness of detritus which can be readily determined because the rocks below it are readily distinguished from it.

The discovery well in the Oklahoma City Pool found its production in the Arbuckle lime after drilling almost a year, and opened the deepest producing major pool in the State. The Arbuckle lime horizon has yielded the largest wells and this horizon also has wells producing the most water in the field. It is the only area in the State where production is found 200 feet or deeper in the Silicious lime. Some estimate the potential water production at 50,000 bbls. daily, which is also increasing. The estimated potential oil production of the field was 307,000 bbls. for the week ending December 14. The total recovery of the Arbuckle lime producing wells was 5,123,562 bbls. for the week ending November 27.

The Detrital sand zone was opened by the Coline Oil Co.'s No. 1 Olds, in Section 24-11-3w, north and west of the discovery well which was in the same section. Production in the sand zone has extended to the north, south and west, and it is believed it will encircle the Arbuckle lime production. It however has not been productive on the east side of the pool to date. How far it extends in these directions is a matter of guesswork. Up to the present it has yielded wells as high as 20,000 bbls. a day and has shown no water. This is an important feature, and some believe that wells in this horizon will compare in longevity to the wells in the Seminole area. Thirteen wells have been completed in the Detrital sand zone with a total initial production of 106,660 bbls. and a total recovery of 1,322,614 bbls. for the period ending November 27, 1929.

The gas pressure of wells, with water encroachment producing from the Arbuckle lime, have declined over half since the time these wells were completed, while the gas pressure of wells in the Detrital sand horizon does not show any decline. Some predict the total recovery of oil will be much larger from the Detrital sand horizon than it will from the Arbuckle lime.

The middle of last week the Coline Oil Co.'s No. 2 Warren blew in and made its initial production of 25,454 bbls. the first 24 hours. It is located in the NW cor. SW, Section 18-11-2w. When first opened its gas flow was too strong for the connections and leaks resulted. Repairs were made and the well was allowed to produce for the full 24-hour period. It made as high as 1,147 bbls. in one hour. The oil is coming from the Arkuckle lime at 6,054-6,537 feet.

Another well was completed on the west side of the field, Indian Territory Illuminating Oil Co. and others' No. 1 Speegle, SW cor., Section 24-11-3w. It made 1,298 bbls. in 24 hours. It is producing from the Detrital sand at 6,375-6,400 feet. It is the offset to the Mid-Kansas Oil & Gas Co.'s No. 1 Mollman, which extended the production a half mile west.

Skelly Oil Co.'s No. 1 Hoopes, NW cor. NE, Section 31-11-2w, considered by many to be the largest sand well in the south part of the field, was opened for a production test on December 18 and was allowed to produce 15 minutes when it made 600 bbls. A connection on the separator was torn loose and leaks developed and it was again shut in. The well produced 7,400 bbls. in 6 hours and 18 minutes of its remaining 24 hours initial to produce. The well is producing from the Detrital sand at a total depth of 6,395 feet.

Prorated Production

The Oklahoma City Pool averaged 55,331 bbls. from 42 wells for the period ending December 18. The gauges by companies and leases were as follows:

Company, lease—	Wells	Bbls.
Coline, Olds	3	2,687
Cromwell, Trosper Park	1	975
I. T. I. O., B. Anderson	1	1,773
I. T. I. O., A. Bodine	1	1,544
I. T. I. O., S. Bodine	2	507
I. T. I. O., Button	2	6,886
I. T. I. O., Foster	1	364
I. T. I. O., Fuzzell	1	8,484
I. T. I. O., Johnson	1	2,157
I. T. I. O., Speegle	1	135
I. T. I. O., Trosper	3	409
Mid-Kansas, Fortson	5	6,722
Mid-Kansas, Trosper	1	247
Prairie, Hiddleston	3	6,611
Hall & Briscoe, Childs	1	4,065
Shell, Petty	5	3,608
Sinclair, Stamper	5	2,320
Sinclair, Kinter	2	227
Slick, Glidden	2	2,965
Skelly, Hoopes	1	1,061
Wirt Franklin, Lowery	1	1,584
Total	42	55,331

Lincoln County's New Pool

Magnolia Petroleum Co.'s No. 1 Wagner, NE cor. NW NE Section 17-14-4, Lincoln County, in the new field opened up last summer by the same company, was making 55 bbls. an hour from the Simpson at 5,065-77 feet. The area has seven other drilling tests and four of these are nearing the pay horizon. The pool is located a short distance west of Chandler.

Seminole Developments

Seminole production shows a decline of about 5,000 bbls. for the week ending December 18, compared with the previous week. The decline was mostly in the Earlsboro, Searight and Little River Pools. The two flush areas in the district both show increases.

East Earlsboro Pool had several new wells which increased its production about 1,000 bbls. daily. Some wells were opened after being shut in for proration. Others are showing water. Sinclair Oil & Gas Co.'s No. 1 Nevens, NW cor. NE NW Section 5-9-6, swabbed 865 bbls. after a shot from a total depth of 4,337 feet. Tidal Oil Co.'s No. 1 Harjo, NW cor. NE NW Section 20-9-6, was plugged back to a total depth of 4,287 feet, and

(Continued on Page 88)

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location— Remarks:

Smith Bros.' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w ..... Shut down 1,222 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w .. Shut down 4,650 ft.

BECKHAM COUNTY

Kay and others' No. 1 Martin, C E half E half NW Sec. 32-8-24w ..... Shut down 3,056 ft.
Producers Exploration Co.'s No. 1 Seidell, SE cor. SW SW Sec. 17-9-22w ..... Shut down 3,402 ft.
Carson and others' No. 1 Danby, SW cor. SE NE Sec. 20-8-22w ..... Shut down 1,575 ft.

BLAINE COUNTY

Lowen and others' No. 1 Unknown, NW cor. SW NW Sec. 27-16-11w ..... Spudded and shut down.
Washoma Oil Co. and others' No. 1 Phillips, C NW SW Sec. 12-19-10w ..... Shut down 2,935 ft.

CADDO COUNTY

Abernathy & Brown's No. 1 Horton, SE cor. Sec. 8-6-13w. Shut down 535 ft.
W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w ..... Shut down 3,394 ft.

CLEVELAND COUNTY

Harris et al's No. 1 Highbee, SE NW Sec. 20-6-1 ..... Rig.
Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w ..... Shut down 3,130 ft.
Phillips Pet. and T. B. Slick's No. 1 Sudick, NE cor. NE Sec. 8-10-2w ..... Drlg. 7,625 ft.

COAL COUNTY

W. E. McGraw's No. 1 King, C SW NE Sec. 11-1-8e .... Shut down 1,285 ft.

COMANCHE COUNTY

G. W. Stogner's No. 1 Doebel, C SW SW Sec 3-3-9w ... Rig.
Green and others' No. 1 Wilson, C NE SW Sec. 14-1-12w.. Shut down 4,655 ft.

CREEK COUNTY

Carter Oil Co. et al's No. 1 Clinton, SW NW Sec. 12-15-9.. Shut down 3,412-15 ft.; water.

GARFIELD COUNTY

Continental and Barnsdall's No. 1 Brown, CNL SW Sec. 10-20-4w ..... Drlg. 2,730 ft.
E. L. Love and others' No. 1 White, SE cor. NW Sec. 9-24-6w ..... Fishing 5,566 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w... Spudded and shut down.
J. M. Henry and others' No. 1 Abraham, SE cor. NW Sec. 4-5-8w ..... Rig.

(Continued on Page 228)

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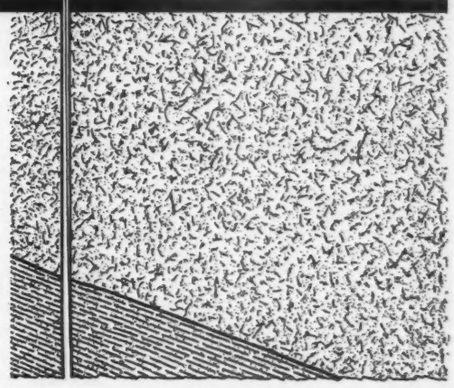
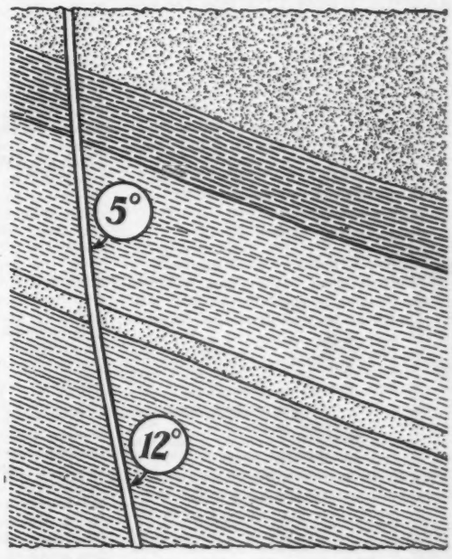
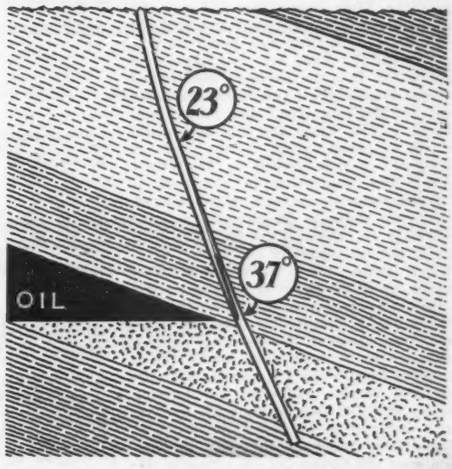


The illustration above shows the complete hookup of the Driftmeter at a drilling well. The special winch mounted on suitable truck chassis controls the electrical cable in the well from which is suspended the instrument. When the Driftmeter has reached the depth at which a reading is to be taken, the winch is stopped, the operator at the truck presses the button which establishes electrical connection between the actuating mechanism in the hole and the recording dial. At the moment of contact the needle on the dial instantly indicates the inclination of the shell in the hole. When the reading has been taken, the moisture proof case containing the actuating mechanism is raised or lowered to the point where the next reading is to be made. Readings taken while running in may be checked by a separate set on the return trip.



An idea of the speed with which reading can be taken with the Driftmeter is indicated by the fact that 17 readings were made in one well in 25 minutes (exclusive of 15 minutes pulling out time) in 6⅝" casing full of oil. Similar speedy records have been established in both rotary and cable wells. Accuracy of the readings taken with the Driftmeter has been checked with the acid bottle, and in every case the same general trend of deviation has been recorded.



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McPherson County Has High Average

Voshell and Ritz Pools, Under Proration, Have Potential of 14,000 Bbls. Signs of New Pool in Sumner County

By W. A. Spinney
Staff Correspondent, Kansas Fields

Kansas' newest field of importance, McPherson County, made up of the Voshell Pool and the Ritz Pool, has a potential production of 14,000 bbls. a day from a few wells. The two pools are under proration and all the producing wells are pinched in to a small proportion of their ability to produce.

A new pool is believed to have been opened near Burden, in Cowley County. The Lewis Production Co.'s No. 1 Fitzgerald, in Section 20-31-6, Cowley County, found a good showing of oil in the Bartlesville sand at 2,897-2,920 feet. Oil rose in the hole 800 feet in 10 hours. The test is in an area where big gas production has been found recently. The nearest oil production is a mile and a quarter southwest. The well will be drilled deeper in the sand and a production test made.

The Derby Oil Co.'s No. 1 Voshell, NE cor. SE Section 9-21-3w, McPherson County, has been pinched in to 50 bbls. daily, in accordance with the proration plan in that area. The well has been allowed to produce wide open for 35 days taking its discovery rights. In that period it averaged more than 1,200 bbls. daily and yielded a total of approximately 45,000 bbls. It made an initial production of 1,328 bbls., and the day it was pinched in it made 1,181 bbls. the previous 24 hours.

The big well of the Shell Petroleum Corp. in the Ritz Pool, McPherson County, has declined from around a pinched-in production of 3,200 bbls. to a further reduced production of 1,780 bbls. It is No. 1 Miller in Section 1-20-2w. The owners are maintaining a heavy back pressure of 175 pounds on the well. It gauged 1,250 bbls. of oil and 350 bbls. of water on the gauge of December 21, ending at 7 a.m.

In the Voshell Pool

Sinclair Oil & Gas Co. is offsetting the Empire Oil & Refining Co.'s new well in the Voshell Pool, McPherson County, with a location in the NW cor. SW NW Section 10-21-3w. Another new location in the pool is the Derby Oil & Refining Corp.'s No. 2 Voshell, in the SE cor. NE SE Section 9-21-3w. A half mile east the Aladdin Petroleum Corp. and E. W. Marland, Inc., may begin a test soon after the first of the year in the NW cor. SW SE Section 10-21-3w. Another wildcat is rigging up in Section 22-21-3w. It is owned by Helmerick & Payne, located 1½ miles southeast of the main pool.

Five wells have been completed in the Voshell Pool, four are producing from the Wilcox sand horizon and the other from the Viola lime. The Wilcox sand wells have a potential production of 6,100 bbls. daily. The fifth well found its production in the Viola and is pumping 30 bbls. daily. It is the discovery well drilled by Ted Washabaugh and others and later sold to McBride, Inc. The casing collopsed in the Viola and the hole could not be deepened to the Wilcox sand. A twin well may be drilled to the Wilcox sand. The production in the pool is under a proration plan which restricts all producing wells to 50 bbls. daily until February 15. Seven other tests are drilling in the main part of the pool.

Two miles north, in the extension opened by Slick, Pryor & Lockhart's No. 1 Grattan, in Section 34-20-3w, the discovery well is averaging around 200 bbls. daily from the chat. Several other drilling tests are under way. The Derby Oil & Refining Corp.'s No. 1 Krehbiel, NW cor. NE SW Section 34-20-3w, was landing casing at 3,138 feet to shut off a cave. It is believed to be below the depth it should have found the chat pay. A location west the Gypsy Oil Co.'s test is rigging up standard tools at 3,072 feet. The top of the chat was found at 3,068 feet. The Derby Oil Co.'s test will be drilled to the deep horizon.

Shell Petroleum Corp.'s No. 1 Harper, SW cor. NE Section 35-26-3, western Butler County, southeast of Benton, is a location. It is 1½ miles west of the Lario Oil & Gas Co.'s drilling well in Section 36-26-3. Several years ago the Lario Oil & Gas Co. drilled a test in Section 9-26-3, northeast of Benton, and found a producer in the chat. All offsets to the producer were dry holes. Both the above wells are being drilled in hope of finding the chat pay.

In Sedgwick County

With a showing of oil in the deep horizon prospects for a third producing formation in the Valley Center area in Sedgwick County were brighter. Rogers & Reynolds' No. 1 Updegraff, in Section 35-25-1w, Sedgwick County, 2 miles northwest of the Valley Center Pool, had a showing of oil in the Silicious lime at 3,670-73 feet. The test was drilling deeper at 3,715 feet. Some express an opinion that the showing of oil was found in the same formation that is producing in the Valley Center Pool, only it is 300 feet lower.

Wentz Oil Corp.'s No. 5 Bright, NW cor. NE NW Section 1-26-1w, in the Valley Center Pool, swabbed 126 bbls. in 16 hours from a sandy lime at 3,343-45 feet. The producing horizon in the offset well was found at 3,362 feet. After swabbing the new well for several days it may be deepened to the lower pay.

In the north extension to the Lygrisse Pool, east of the Greenwich Townsite, Sedgwick County, Gypsy Oil Co.'s No. 4 Hamant, NW cor. Section 14-26-2, found the Dolomite pay at 3,154 feet, and was preparing to drill deeper into the formation. It missed the chat pay from which the offset well made 1,100 bbls. initial production.

In the area west of Wichita, T. C. Johnson's No. 1 Peachy, in Section 2-27-1w, Sedgwick County, was dry in the Dolomite and has been abandoned after drilling deeper to 3,519 feet in the Silicious lime. It was the west offset to the Plains Oil Co.'s No. 1 Curry, the discovery well in that area, which is now pumping around 150 bbls. daily.

J. S. Cosden, Inc.'s No. 1 Deweese, in Section 1-26-1w, west of the Valley Center Pool, in Sedgwick County, was shut down at 3,650 feet. It was dry in the regular pay horizon and is shut down in the Silicious lime. Tavender Oil Corp.'s No. 1 McLean, SE cor. SW SE Section 23-26-1w, was spudding. It is a wildcat test south of the Valley Center Pool, and is being drilled in hope of finding a new producing area, in the Wichita district.

In Sumner County, north of the State Line Pool, the Blackwell Oil & Gas Co. is moving in tools for a test at its No. 1 Clift, SE cor. NW Section 26-33-3w, Sumner County. The new test is located a half mile east and a half mile south of the Burlingame & Long's No. 1 Rex, which had a good showing of oil in the chat.

Sumner County

North of Wellington, in Sumner County, the new well of Slick, Pryor & Lockhart and others' No. 1 Peasel, in Section 33-31-1w, has been flowing about 200 bbls. daily from the chat at 3,651-59 feet. This well has caused a lot of interest in the area, and offset wells may be started. The Sunray Oil Corp. and others may start an offset to the new well on the Neal acreage in Section 29-31-1w, Sumner County.

In the Oxford district the Shell Petroleum Corp. has a showing of oil in its No. 1 Armstrong, NE cor. Section 12-33-1, Sumner County. The showing was found in the Wilcox sand at 3,778-83 feet. The crew was fishing for a bit on the last report. The test is located on a core-drilled block of acreage. This test also had a showing of oil in the chat at 3,408-41 feet.

The Harold Petroleum Co.'s No. 2 Schartz, in the NE cor. Section 27-34-2, Sumner County, Geuda Springs district, was drilling at 2,420 feet. It is the only test drilling in the area at the present time.

Water in the Wilcox

Shawver and others' No. 1 Oldham, NW cor. SE Section 23-32-3, Cowley County, west of Winfield, found water in the Wilcox sand at 3,495 feet. The test was apparently running high until it reached the Wilcox sand horizon. Mid-Kansas Oil & Gas Co.'s No. 1 Harris, in Section 20-31-6, has finally succeeded in cementing off the 20,000,000 feet, of gas it found in sand at 1,640-48 feet. It was drilling deeper at 1,650 feet. In the Winfield Pool, the Century Oil Co.'s No. 1 Cavit was drilling at 1,000 feet. Fine and others' No. 1 Brown, SE cor. Section 8-32-4, a wildcat west of Winfield, was spudding at 400 feet.

Roth & Farout's No. 1 Thompson, NE cor. SE Section 31-31-8, in the northwest part of Cowley County, found a showing of oil at 1,975-78 feet. Oil rose 1,000 feet in the hole in 12 hours.

New Work in Greenwood County

In the Patterson area north of Hamilton, in Greenwood County, oil development is beginning to move along at a faster pace. Until recently it appeared that a lull in drilling would be felt in the district, until market conditions improve. Prairie Oil & Gas Co.'s No. 1 Newhouse, NW cor. NE NE, Section 1-24-11, made 408 bbls. after a 200-quart shot. It is located south of the Empire Oil & Refining Co.'s Patterson lease in Section 36-23-11, which yielded the only producing wells in the area until the Prairie Oil & Gas Co. completed its well.

The Empire Oil & Refining Co. is preparing to start an offset to the Prairie Oil & Gas Co.'s new well. It will be No. 5 Patterson on the south line of Section 36-23-11. Until the Prairie Oil & Gas Co. completed its well there was no necessity of drilling the south line. Empire Oil & Refining Co. has made a location for its No. 6 Patterson, east of its No. 4 Patterson, and south of the Continental Oil Co.'s No. 1 Holland, which was a dry hole.

The Empire Oil & Refining Co. has announced it will slow down all development work, except that now under way. The company has only four or five wells drilling and most of these are wildcats. No new work will be started in the specified period. The decision has been taken on account of the seasonable decline in crude oil requirements, which will be best served by a restricted drilling campaign.

Simmons & Rhodes and others' No. 1 Patterson in Section 22-23-11, Greenwood County, appears to be good for 150 bbls. from the Bartlesville sand at 1,884-1,910 feet. It will be given a shot and put on production. In the same area the Dixie Oil Co.'s No. 4 Ellis, in Section 27-23-11, was drilling at 1,000 feet.

In the old Potwin area in Butler County, the Southbrook Corp.'s No. 1 Joseph, in Section 25-24-3, has encountered a sand at 2,685 feet, with a showing of oil. Casing will be landed on top of the sand and a production test made. Same company drilled a test in Section 18-25-4, Butler County, south of Potwin, hoping to find a southern outlet of the old production area. It was dry and later abandoned.

Butler County

Empire Oil & Refining Co.'s No. 18 Houston, SW cor. NE SW, 19-26-5, made 60 bbls. in sand 2,616-87 feet. White Eagle Oil & Refining Co.'s No. 1 Stone "A," NE cor. NW SW, Section 2-25-5, has been abandoned at 3,182 feet. Walton Oil Co.'s No. 1 Weakly, SW cor. NW, Section 2-24-3, has been abandoned at 2,916 feet.

Coffey County

Selby Oil & Gas Co. has the rig up for No. 2 Scott, SE cor. NE SW, Section 13-23-14.

Cowley County

Lewis Production Co. & Gypsy Oil Co.'s No. 1 Pierce, NW cor. NE SE, Section 30-31-6, is a rig. No. 1 Sitton, SW cor. SE NE, Section 30-31-6, made a 30-bbl. well in sand 2,898-2,930 feet.

Ellis County

Phillips Petroleum Co.'s No. 1 Weigel, NE cor., Section 19-12-17w, made 300 bbls. in sand 3,363-68 feet.

Elk County

Winemiller and others' No. 2 Mullendore, SW cor. NW SW, Section 3-30-9, has been abandoned at 2,364 feet.

Greenwood County

Young and others' rig is up for No. 1 Bowman, CEL SE NW, Section 7-24-13. McGinnis and others built the rig for No. 1 Henley, SW cor. NE, Section 23-25-9. Derby Oil Co. and others' No. 3 Young, C N half SE NE, Section 22-22-13, made 100 bbls. in sand 1,805-20 feet. No. 1 Albans, CSL SE SW, Section 8-24-13, is dry and abandoned at 1,622 feet. Independent Oil & Gas Co.'s

(Continued on Page 171)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

BARBER COUNTY

Company, farm and location—	Remarks:
Skelly Oil Co.'s No. 1 Temple Ranch, Sec. 13-34-15w	Drlg. 4,450 ft.
Robertson et al's No. 1 Powell, SE cor. SE Sec. 11-32-10w	Total depth 3,650 ft.; 5,000,000 ft. gas; landing 8-in. csg.

BARTON COUNTY

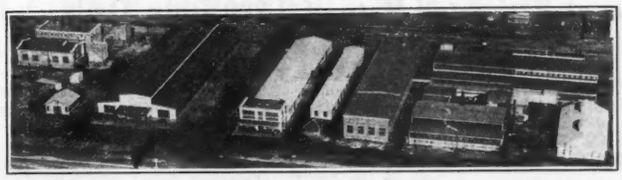
Prairie's No. 1 Davidson, NW SE Sec. 4-16-11w	Rig on ground.
Allison & Fitzwilliams' No. 1 Brodie, NE cor. Sec. 19-16-12w	Drlg. 3,150 ft.
Slick et al's No. 1 Sweeney, SW NE Sec. 23-17-11w	Drlg. 2,345 ft.
Everett & Wiley's No. 1 Ward, NW cor. SW Sec. 12-20-13w	Shut down 3,948 ft.

BUTLER COUNTY

Lario O. & G. Co.'s No. 1 Hill, SW SE Sec. 1-27-4	Drlg. 3,010 ft.
Lario O. & G. Co.'s No. 1 Miller, NE SE NE Sec. 36-26-3	Drlg. 2,535 ft.
Martin et al's No. 1 Flanigan, C SW SE SW Sec. 29-27-3	Drlg. 1,855 ft.
Stroub & Dutton's No. 1 Kirby, SE SW Sec. 12-28-3	Drlg. 2,370 ft.
Valley Osage's No. 1 Sirs, SE cor. Sec. 34-23-3	Shut down 2,600 ft.

CHASE COUNTY

Steinbuckel et al's No. 1 Stephenson, NE SW Sec. 4-20-6	Drlg. 380 ft.
Steinbuckel et al's No. 1 Cook, SE cor. Sec. 31-19-8	Spudding.
Empire's No. 1 Newman, SE NE Sec. 24-20-9	Drlg. 750 ft.
E. W. Marland, Inc.'s No. 1 Altemus, SE NE Sec. 33-18-6	Drlg. 1,500 ft.



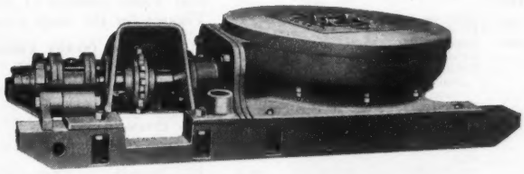
Air view of the American Well & Prospecting Company plant and main offices at Corsicana, Texas. This entire plant is devoted exclusively to the manufacture of complete rotary equipment, known as "Gumbo Buster."

H. G. Johnston, president of the American Well & Prospecting Company since its organization in 1886, is known to the oil industry as the "Dean of Rotary Drilling." The trade name of the rotary rigs manufactured by this company is "Gumbo Buster" but they are commonly called "Johnston Rigs" throughout the world.

"GUMBO BUSTER" *Rotary Equipment Served Spindletop in 1901*

Years before Spindletop boom the manufacturers of "Gumbo Buster" equipment secured the services of the Baker Brothers, inventors of the first rotary, and began the first manufacture of rotary drilling equipment. They proved rotary drilling a success and by 1901 many wells were being drilled by this method, using "Gumbo Buster" machinery to do the work.

Since the early days at Spindletop oil has become a world commodity with a world market and the sources of supply are scattered over the globe. Rotary drilling methods have been accepted in practically every field and "Gumbo Buster" machinery has been constantly pioneering improvements to meet changing drilling conditions. It has been particularly adapted to foreign fields where the worst drilling conditions are encountered and where equipment must stand the gaff. "Gumbo Buster" equipment is proven. There are men in every field who have been trained on these rigs.



THIS NEW ROTARY Runs in a Bath of Oil

This new 26" Roller Bearing Oilbath Rotary which is offered by the manufacturers of "Gumbo Buster" drilling equipment, runs in a bath of oil. Its superiority is creating a tremendous demand in the deeper oil fields. With heat treated machine cut gears, roller bearings, the very fewest parts, and completely lubricated continuously, this rotary is meeting with approval everywhere.

The Oilbath design assures constant lubrication of gears and cones, prevents entrance of foreign matter to these parts, eliminates "whipping" in rough drilling and insures reliable and economical service.

TODAY—*IT HANDLES THE HEAVIEST WELL WORK IN THE WORLD*

The New Oilbath Roller Bearing Rotary shown at the left was fisrt used in the Oklahoma City field. Here the heaviest well work in the world is being done. Because all "Gumbo Buster" equipment is manufactured under controlled processes, it is sturdy enough to meet any drilling conditions.

1. All steel rotary including skids.
2. Inside hold-down, constantly lubricated, forms a radial bearing for table, holding it in exact concentric rotation. In rough drilling this bearing takes the tooth load of pinion on table gear. These features afford even, smooth, quiet rotation.
3. Both pinion boxes are in one casting and are not adjustable, assuring proper alignment at all times of the four Hyatt Roller Bearings (two in each box) and proper engagements of teeth on ring gear.
4. 4¾" pinion shaft runs in four Hyatt Roller Bearings.
5. Gear teeth are forged, cut, hardened and shrunk on master wheel.
6. Convenient locking device on end of pinion shaft.

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GENERAL OFFICES: HOUSTON, TEXAS

May Extend New Gulf Coast Fields

Wildcats at Fannett and Hankamer Testing Oil Sands. Barbers Hill Well Flows at Estimated Rate of 1,200 Bbls. Daily

By Nell Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Dec. 23.—The holiday spirit apparently has blanketed field operations in the Gulf Coast division. While at the close of the week several tests in newly opened fields promised extensions to productive territory, completions generally the past week were of little importance and as only a small amount of new work is being started, or will be before the first of the year, an inactive atmosphere prevailed throughout the territory. Failure to bring in new flush production of consequence the past two weeks was reflected in daily average production figures of the coastal fields by a reduction in the daily output of nearly 5,000 bbls.

Two wildcats, Gulf Production Co.'s No. 3 Boyt at Hankamer, southern Liberty County, and the same company's No. 4 Burrell at Fannett, Jefferson County, were testing oil sands at the close of the week with indications the production of each of these new fields would be extended. The Boyt test in a sand at approximately 3,700 feet at which horizon No. 2 Boyt, 200 feet north of No. 3, blew out making an estimated 15,000 bbls. of salt water with 30,000,000 feet of gas. No. 2 later was plugged to a sand at 2,925 feet, making a 500-bbl. well. Hankamer, which has been one of the interesting new prospects because of the leasing play which followed its discovery, so far has only two producers with a total production now of less than 200 bbls. daily.

The Fannett well offers possibilities of new production on that dome, which recently revealed its prolificness by the completion of several large wells. The new test is approximately 800 feet northeast of the Gulf company's No. 12 Thomas, which as a 3,600-bbl. well, definitely established Fannett as one of the coast's best potential sources of oil. No. 4 Burrell, which is being tested, is in a sand at a total depth of slightly lower than 4,200 feet, slightly higher than the sand in No. 12 Thomas.

Barbers Hill Producer

Deep production on the southeast flank of Barbers Hill was extended slightly by Yount Lee Oil Co.'s No. 1 Phillips which Saturday was flowing at an estimated rate of 1,200 bbls. daily from sand at a total depth of 5,292 feet. This well is an offset to Sun Oil Co.'s No. 1 J. Wilburn, a good producer, and was the best well of the week. Sun Oil Co.'s No. 1 Wilburn fee, a former well deepened, tested salt water with a small amount of oil from sand in which a packer had been set at 5,426 feet. Several other deep tests are testing oil sands and are due in but they have not been completed.

Republic Production Co.'s No. 56 Dolbear at Hull added an estimated 1,500 bbls. of flush production to that field when it was brought in from a sand at 2,622 feet. This, however, is in the heart of the field and is an old well deepened.

Four completions were made at Refugio which the past week won mention by jumping to third place among Gulf Coast fields in production although only a year and a half old. Daily average production at Refugio now is better than 17,000 bbls., which is surpassed only by Spindletop and Barbers Hill. The new wells at Refugio were Pearson Properties' No. 1 Babb (Bailey), which from the sand at 3,680-98 feet, flowed 900 bbls. of pipe line oil on a three-eighths-inch choke; Independent Oil & Gas Co.'s No. 5 Reilly, flowing 650 bbls. at 3,679-89 feet; Houston Oil Co.'s No. 9 Wilson Heard, blowing gas and spraying oil, at 3,673-81 feet, and Houston Gulf Gas Co.'s No. 9 J. A. Lambert, dry gas at 3,564-77 feet. The latter was a workover.

Humble Oil & Refining Co. made some slight extensions at its Dewalt Dome in Fort Bend County with No. 11 Sugarland and No. 7 Nelson. The former was completed good for an estimated 250 bbls. daily at 3,755 feet, and the latter an estimated 400 bbls. at 3,812 feet. At Big Creek, Gulf Production Co.'s No. 45 Davis, an old well deepened to 4,246 feet, was put on the pump for 150 bbls. daily. Vacuum Oil Co.'s No. 3 Bayou D'Inde at Lockport, Calcasieu Parish, Louisiana, a former well deepened to 5,610 feet, made dry gas with 2,200 pounds pressure. All other completions in the division were small producers under 100 bbls. daily, the majority being workovers.

Humble Deep Sand

There were no developments of interest in the new deep sand play on the south side of Humble, but a half dozen tests in the vicinity of The Texas Company's No. 1 Dunman, which several weeks ago made an 8,000-bbl. well, are nearing the producing horizon and should figure in this week's news to prove the extent of the prolific production found by The Texas Company. Although there are 14 active operations at Humble, no new tests have been started within the past several weeks.

The Texas Company failed to make a producer of its No. 1 Fitzhugh on the north side of Big Hill, Jefferson County. Showings in the sand below 5,050 feet had indicated a possible good well but on bailing the test showed salt water and now screen is being pulled to deepen. There is no production at Big Hill although showings in various wildcats drilled around the dome have been tantalizing enough to keep the eyes of operators on that area. One producer was completed years ago at Big Hill but this failed to hold up long enough to be called the discovery well. The Texas Company, which earlier in the year, acquired extensive holdings at Big Hill on the east and north sides, now is attempting to develop the dome.

Some interest was centered in West Columbia where Humble Oil & Refining Co.'s No. 3 Smith tried to blow out at 5,123 feet. This was killed and late in the week the company was trying to bring the well in under control. West Columbia, which until several months ago, had been virtually inactive except for an occasional test, has been the scene of an active play recently, but, so far disappointing except for one well completed by The Texas Company. The play, however, has resulted in several interesting tests, one of which, Continental Oil Co.'s No. 1 Hogg, which has broken depth records there by going to 6,218 feet. At present it is in heaving shale fishing drill stem.

Steady rains, climaxed late the past week by snow, the first in years on the Gulf Coast, have slowed up operations materially in some areas. A number of operations have been shut down because of high water and access to many others has been retarded greatly.

Daily Average Production

Daily average production of Coastal fields for the week ended December 21 totaled 178,087 bbls., a decrease of 4,962 bbls. from the preceding week. The drop was the result of declines in South Louisiana fields, particularly Sulphur, where daily production has been high for several weeks because of flush production. Figures for the week were:

GULF COAST PRODUCTION

Texas

	Bbls.
Allen	11
Barbers Hill	17,668
Batson	1,305
Big Creek	6,995
Blue Ridge	2,283
Brenham	150
Boling	1,235
Clay Creek	1,658
Damon Mound	528
DeWalt	12,279
Fannett	1,437
Goose Creek	5,334
Hankamer	187
High Island	1,422
Hull	10,251
Humble	11,065
Jasper	25
Lost Lake	1,035
Markham	366
Nash	510
North Dayton	3,400
Orange	2,772
Orchard	80
Pierce Junction	12,637
Port Neches	3,112
Raccoon Bend	8,618
Refugio	17,015
Sheeks	660
Saratoga	985
Sour Lake	1,977
South Liberty-South Dayton	5,270
Spindletop	19,389
West Columbia	6,615
To.al Texas Coast	158,282
Week ending December 14	156,586
Increase	1,696

South Louisiana

Anse La Butte	45
Black Bayou	40
Dog Lake	5
Edgerly	1,012
Jennings	1,626
Hackberry	5,152
Lake Barre	330
Lake Pelto	204
Lockport	3,253
New Iberia	15
Port Barre	550
Sorrento	140
Starks	394
Sulphur	3,114
Sweet Lake	17
Vinton	4,258
Welsh	245
White Castle	325
Total South Louisiana	20,705
Week ending December 14	26,463
Decrease	5,758
Total Gulf Coast	178,987
Week ending December 14	183,049
Decrease	4,062

GULF COAST FIELDS AND WILDCATS

Week Ended December 21

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Production Co.'s No. 2 Collier (southwest)	Drlg. shale 4,678 ft.
Mills Bennett Production Co.'s No. 3 Barber, north side	Drlg. lime rock 5,270 ft.
Mills Bennett Production Co.'s No. 3 Hammon-Armstrong (southeast)	Rigging up to pump 5,166 ft.
Mills Pennett Production Co.'s No. 2 Means (east)	Drlg. lime 1,363 ft.
Mills Bennett Production Co.'s No. 2 Wilburn, southeast	Rig.
Humphreys Corp.'s No. 8-A Kirby, north flank	Drlg. sand showing oil 6,305 ft.
Humphreys Corp.'s No. 2-C Kirby	Total depth 5,361 ft.; sidetracked and drilled to 3,310 ft.; cem. casing.
Humphreys Corp.'s No. 1 Higgins	Swabbed some oil in cap rock 841 ft.; to pump.
Humphreys Corp.'s No. 1 McLean, east side	Drlg. shale and lime 3,728 ft.
Humphreys Corp.'s No. 2 Ilfrey, east side	Drlg. hard sand 1,063 ft.
Humphreys Corp.'s No. 1 Morgan	Rig.
Republic Production Co.'s No. 3 Kirby (southeast)	Testing oil sand 5,335 ft.
Rexal Oil Co.'s No. 3 McLean, east flank	Rigging up to pump 5,170 ft.
Sinclair Oil & Gas Co.'s No. 2 Wilburn, southeast	Drlg. gumbo and lime 3,756 ft.
Sinclair Oil & Gas Co.'s No. 1 McKinney (workover)	Drlg. sand and shale showing oil 5,316 ft.
Sun Oil Co.'s No. 1 Wilburn (southeast)	Swabbed 20 bbls. net oil; sand 5,426 ft.
Sun Oil Co.'s No. 2 Wilburn, southeast	Drlg. plug 5,156 ft.; to test oil sand.
Sun Oil Co.'s No. 3 Wilburn, southeast	Drlg. shale and lime 4,223 ft.
Sun Oil Co.'s No. 4 Wilburn (southeast)	Derrick.
Sun Oil Co.'s No. 2 J. Wilburn (southeast)	Derrick.
Sun Oil Co.'s No. 4 Chambers (south)	Drlg. gumbo and lime 1,701 ft.
Sun Oil Co.'s No. 3 McKinney, southeast	Drlg. sand and shale 2,946 ft.
The Texas Company's No. 1 Lawrence	Waiting fuel to deepen 5,260 ft.
Unice Oil Co.'s No. 2 Feldman, east	Rig.
Yount Lee Oil Co.'s No. 10 Chambers (south)	Drlg. gumbo and lime 2,801 ft.
Yount Lee Oil Co.'s No. 11 Chambers, south	Drlg. sand and lime 2,859 ft.
Yount Lee Oil Co. No. 5 Woodward, southeast	Set screen 5,350 ft.; bailing.
Yount Lee Oil Co.'s No. 1 Phillips	Comp. flowing estimated 1,200 bbls. oil 5,292 ft.

BOLING—FORT BEND AND WHARTON

Houston Gulf Gas Co.'s No. 1 Fields (northwest)	Drlg. lime and pyrites 1,452 ft.

RACCOON BEND—AUSTIN COUNTY

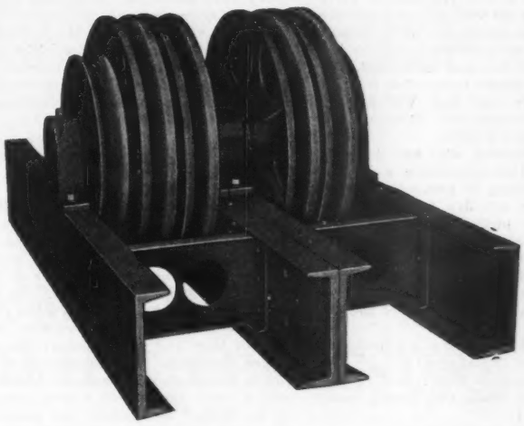
Humble & Valley's No. 5 Austin College	Drlg. shale 180 ft.
Humble & Valley's No. 6-A Bracey	Derrick.
Humble & Valley's No. 7-A Bracey	Location.
Humble & Valley's No. 3 Buchanan	Derrick.
Humble Oil & Refg. Co.'s No. 8-B Deutrich	Waiting cement to set 1,090 ft.
Humble & Valley's No. 9-A Deutrich	Drlg. sticky shale 2,512 ft.
Humble & Valley's No. 11-B Deutrich	Derrick
Humble & Valley's No. 12-B Deutrich	Derrick.
Humble & Valley's No. 5-B Grawunder	Rig.
Humble & Valley's No. 10-B Grawunder	Derrick.
Humble & Valley's No. 3 Helmuth	Derrick
Humble & Valley's No. 3 Jackson	Drlg. shale 186 ft.
Humble & Valleys No. 1-B Machamehl	Spudded and cem. surface casing 41 ft.
Humble & Valley's No. 2 Mahnke	Derrick.
Humble & Valley's No. 6 Mueller	Rigging up to pump 3,270 ft.
Humble & Valley's No. 8 Mueller	Drlg. 1,186 ft.
Humble & Valley's No. 6 Gotosky	Drlg. shale and lime 1,950 ft.
Humble & Valley's No. 1 Duncan, State land	Rig
Humble & Valley's No. 6 Thompson	Derrick.
Humble & Valley's No. 7 Thompson	Location.
Humble & Valley's No. 1-C Mitchell	Location.
Humble & Valley's No. 4 Payne	Drlg. sticky shale 3,164 ft.
Humble & Valley's No. 5 Payne	Drlg. sand 379 ft.
Humble & Valley's No. 6 Payne	Derrick
Humble & Valley's No. 7 Payne	Location.
Humble & Valley's No. 8 Payne	Location.
Humble & Valley's No. 5 Saunders	Rig.
Humble & Valley's No. 6 Urban	Total depth 3,086 ft.; sidetracking 1,609 ft.
Humble & Valley's No. 7 Urban	Drlg. shale and sand 1,165 ft.
Humble & Valley's No. 8 Urban	Drlg. shale 194 ft.
Humble & Valley's No. 4 Sherrill	Location.
Humble & Valley's No. 7-A Walton	Drlg. shale and lime 754 ft.
Humble & Valley's No. 8-A Walton	Derrick.
Humble & Valley's No. 3-A Washington	Derrick

(Continued on Page 193)

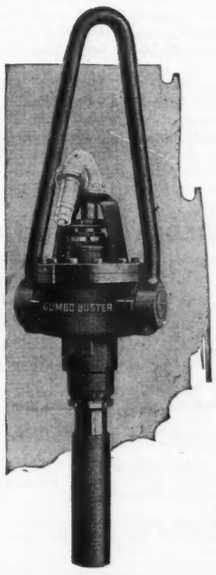
"GUMBO BUSTER" EQUIPMENT GETS CONTROLLED HEAT TREATMENT

TRAVELING BLOCK EQUIPPED WITH 36" ROLLER BEARING SHEAVES. The large roller bearings operate on a 7" center pin which is made from special alloy steel hardened and ground to size. The center pin is set above the center of the block causing it to land in an upright position. All projecting nuts are guarded and tapered to prevent catching on projections.

The 66" traveling block is equipped with steel wire line guards which can be easily and quickly removed from the block and replaced after wire line has been strung up. Each wire line guard is held in place by four large bolts, the heads of which are counter sunk in the guard so they cannot be sheared off by catching on racked pipe or other projections. Each roller bearing is oiled by individual Alemite connections.



8" OIL TIGHT CONE BEARING SWIVEL. All weight carrying parts of this 8" swivel are made from steel castings or steel forgings and will safely handle long strings of heavy drill pipe. The bearing consists of 20 large cones and two plates which are hardened and accurately ground to size. The water course through the swivel is 3" in diameter. Packing glands are large and deep.



STRAIGHT LINE CROWN BLOCK HAS SIX SHEAVES MOUNTED ON TWO PINS. In this new "Gumbo Buster" Crown Block the outside end of each pin rests in a separate box which is supported by a 50 lb. per foot I beam. The inside ends of the two pins rest in the same box which is supported by two 50 lb. per foot channel irons securely bolted together.

There are four 36" manganese steel sheaves for drilling line which rotate on large American Roller bearings. These bearings in turn rotate on a hardened and ground steel sleeve which is shrunk on an alloy steel center pin 7" in diameter. This block meets the recommendations of all wire rope manufacturers.

The outside sheaves are 28" in diameter and are for the catline and deadline. They are made of semi-steel and operate on a bronze bushing. Each of the six sheaves is lubricated from the end of the pin by an individual Alemite connection.

This Crown Block can be taken up in two or four sections.

Each piece of heat treated steel is thoroughly tested before it is used.

Republic Supply Company

OIL AND GAS WELL SUPPLIES

Cable and Rotary Tools

GENERAL OFFICES: HOUSTON, TEXAS

Zwolle Test Somewhat Disappointing

Will Drill Deeper in Hope of Getting Production. Considerable Activity in Acreage Deals. Many New Operations

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Dec. 23.—Trades and rumors of trades, and a test of the first well to reach that stage singe R. L. Gay's discovery well came in three weeks ago kept the Zowlle district uppermost in activities in this division again this past week. The test, although dry, was not entirely disappointing, opinion seeming to be that it was what might be expected of chalk rock and that it did not necessarily mean anything either one way or the other. The test was made by Sabine Oil & Gas Co. on No. 1 Anderson, Section 19-8-12, 3½ miles northwest from the discovery well. Casing was cemented at 2,189 feet and the hole drilled to 2,216 feet and bailed dry. The operators and others acquainted with the situation figure that they will have to drill at least another 100 feet before they can really expect results.

That the discovery well may have hit a fissure and that succeeding wells may prove disappointing in production, in the event they are not dry holes has been the pessimistic outlook on the proposition expressed also in "a chalk rock well is liable to do anything; can't tell where you'll get it if you get it" and a disparaging shrug of the shoulders. Here is the log of the last 100 feet of the discovery well:

2,330 hard shale and a few boulders;
2,336 cored chalk (top);
2,339 cored hard lime;
2,346 cored chalk and brown sandy lime;
2,357 brown sandy shale;
2,370 hard blue lime;
2,388 blue and gray sandy lime, cored;
2,390 cored gummy chalk;
2,396 cored soft sandy lime;
2,405 hard chalk;
2,407 cored hard sandy lime;
2,408 cored lime showing oil and gas;
2,413 cored hard broken lime.

Surface elevation of the well is 334.28 feet. At 393 feet it drilled through a hard broken sand showing a heavy gray oil.

New Operations

Eleven operations are under way in the Blue Lake and Zowlle areas of the Zowlle district and as many of the recently closed trades entail drilling obligations it is quite likely that activities in the area will assume major proportions immediately the holidays are over. Ohio Oil Co. had derricks up for two, R. L. Gay is rigging up for two and is drilling on two more; G. M. Legrand is drilling one and Olsen Brothers are well along with their test in Section 27-8-12, three quarters of a mile north of the discovery well as is D. H. Riddick on the Scretchfield in Section 18-9-12, a wildcat about half way between the Zwolle and Pleasant Hill production.

Standard Pipe Line Co. completed its second line of 13 miles of 6-inch into the new pool December 19 and started running oil to connections in Pleasant Hill. The first line, 4-inch, has run something over 40,000 bbls. of oil from the discovery well to the Oklahoma-Baton Rouge main line at Noble since it was completed a couple of weeks ago and the well itself has been opened a trifle and is flowing as strong as ever at 3,600 bbls. daily after three weeks. Its production to date totals 50,487 bbls.

There have been many rumors of offers to Gay and his principal for their entire holdings. Transcontinental Oil Co. is reported to have offered $3,500,000 and a stock interest in a new company to be formed to operate the properties of which $1,500,000 was cash and the remainder from production. An unidentified Tulsa interest is reported to have offered $6,000,000 on terms not known and New York interests are said to have made a similar offer at the same figure.

Frankel Brothers of New York paid $30,000 cash and $10,000 out of first production for five 40's around the four producers in the Blue Lake (west) end of the district in Section 14-7-14, the assignment containing a 30-day drilling clause on each "forty," the leases being in Sections 7, 8, 20 and 23-7-13 and 34-8-12.

Buying Acreage

The Texas Company has bought approximately 5,000 acres scattered around the discovery well in the east end of the district, around the Blue Lake producers and in between. Root Refiners took a 225-acre lease of which 120 acres is in Section 23-8-12, 1½ miles north of the producer for $100 an acre without drilling obligation. A trade reported today was a "40" three-quarters of a mile northeast of the well for $1,000 an acre and $10,000 out of the first oil.

Prices are going up, and as a sequel to the play immediately surrounding the discovery well, in Section 34-8-12, lease men are busy far east of it. The district clerk of Natchitoches Parish one day this week reported 74 leases recorded on lands from 12 to 20 miles east of the Zwolle strike. C. J. Cly filed 38 and Gulf Refining Co. filed 36. Several thousand acres along the flexure of the Sabine uplift are involved. Cly is interested in a well being drilled now at Robeline, Robeline Oil & Gas Co.'s No. 1 Winn, Section 7-8-9, which is down below 850 feet.

Pleasant Hill Completion

Pleasant Hill district of Sabine Parish had another completion in Bridges-Clarke Oil Co.'s No. 3 Williams, Section 33-10-12, which started off flowing 90 bbls. from 8 feet of sand, total depth 3,219 feet (corrected depth), and they immediately made location for No. 1 Gay and others, in Section 3-9-12, a wildcat east of production, and for No. 1 J. W. Guy in Section 33-10-12 on which they are rigging up.

Benson Oil & Gas Co.'s No. 1 Harris, in Section 6-10-12, DeSoto Parish, tried to blow out as a gasser from 8 feet of sand, total depth 3,059 feet, and 6⅝-inch casing is being set for a test. This is the first deep test in the Benson district 10 miles south of the Spider (discovery) area and about half way between Spider district and Pleasant Hill. Shallower tests showed for oil and gas both and two wells of commercial proportions have been completed. The same company's No. 1 Hill Section 4-10-13, cored sand at 3,104 feet. Benedum & Trees Oil Co. has derrick up for the well it was obligated to drill on a block acquired during the summer, location being on the Johnson land in the NE cor., Section 7-11-13, on the east edge of the Spider district.

Richland Parish

Developments in Richland Parish, except for two fairly good wells, were a success of dry tests, one of which was the Palmer's deep hole in Section 26-17-6, in the northeast corner of proven territory. Northern Louisiana Natural Gas Co.'s No. 1 C. M. Purvis, Section 3-16-6, gauged 46,420,000 feet, total depth 2,450 feet, and Richland Producing Co.'s No. 1 Brown, Section 1-16-6, measured 47,556,000 feet from 2,452 feet. Industrial Gas Co.'s No. 1 A. T. Davidson, Section 6-16-7, was dry at 2,452 and 2,468 feet and is deepening, as are all the other wells that got dust. The same company's No. 1-A Jack Davidson in the same section had a million feet of gas at 2,452 feet, passed it up and tested dry again at 2,470 feet; No. 1 T. R. Hodge, Section 7-16-7, was dry at 2,450 feet and again at 2,490 feet. Palmer Corp.'s No. 2 Earls, Section 31-17-6, had a million feet of gas at 2,450 feet and is drilling deeper; No. 1 Eubanks, the deep test, got salt water at 3,118 feet and is waiting for cement to set after plugging back to 2,440 feet. Hope Production Co.'s No. 1 Eubanks in Section 26-17-6, the deep sand discovery well, gauged 7,653,000 feet of gas at 1,260 pounds from 2,942 feet and is half a mile northeast of the Palmer well. The shallow dry tests are all located in the northeast corner of the original proven area but have much production north, south and west of them in the same horizon.

Palmer Corp. which has what might be called a "privately owned" gas field

(Continued on Page 171)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH—BELLEVUE

Company, farm and location—	Remarks—
H. L. Morgan's No. 2 Wetherbee, 3,811 ft. E, 200 ft. S. NW cor., Sec. 28-19-11	Tested sulphur wtr. 2,317-20 ft; coring 2,367 ft.

BOSSIER PARISH—CARTERVILLE

Del.-La. Dev. Co.'s No. 5 Bollinger, Sec. 31-23-11	Standing 2,000 ft. in oil; 4-ft. oil sand; arranging to set tubing; T.D. 3,150 ft.
Goodman-Johnson's No. 1 Martin, 330 ft. S, 330 ft. E. NW cor. SE, Sec. 26-23-12	Drlg. 3,175 ft.
La. Pet. Corp.'s No. 2 J. W. Peyton, 1,170 ft. S. 150 ft. W, NE cor. SE, Sec. 25-23-12	Location.
Palmer Corp.'s No. 4 Roberson, 660 ft. S, 660 ft. E. NW cor. NW NE, Sec. 26-23-12	Location.
Magnolia Pet. Co.'s No. 1 M. A. Rogers, 660 ft. S, 660 ft. W, NE cor. NE SE, Sec. 21-23-12	D.S. test 3,182-86 ft; 2 joints oil; S.W. broke in; rlg. 3,192 ft.
Magnolia Pet. Co.'s No. 1 Robertson, 412 ft. S, 660 ft. E, NW cor. SW NE, Sec. 26-23-12	O.W.D.D; rigging up to deepen; 3,058 ft.
Muslow Oil Co.'s No. 1 Barnett, 1,320 ft. W, 660 ft. N, SE cor., Sec. 25-23-12	Cmtd. 6-in. 3,140 ft; 3-ft. sand 3,143 ft.
Muslow Oil Co.'s No. 1 Kilgore, 2,080 ft. N, 1,980 ft. E. SW cor., Sec. 31-23-11	O.W.D.D; arranging to deepen; T.D. 3,078 ft.
Muslow Oil Co.'s No. 1 Mark Myer, 1,980 ft. N, 330 ft. W, SE cor., Sec. 36-23-12	O.W.D.D; arranging to deepen; T.D. 3,088 ft.
Muslow Oil Co.'s No. 1 Peyton, Sec. 30-23-11	Cmtd. 4½-in. 3,120 ft; T.D. 3,126 ft; 4-ft. sand.
Northwest La. Gas Co.'s No. 5 Bollinger, 252 ft. E, 200 ft. S, NW cor. Lot 7, Sec. 31, in Sec. 38-23-11	Rigging up.
Nat. Gas Prod. Co.'s No. 1 U. S. Govt., 660 ft. N, 660 ft. W, C, Sec. 31-23-11	Standing full oil and S.W; 4-ft. sand; T.D. 3,158 ft.
Sales & Walker's No. 4 Bollinger, 696 ft. S, 1,120 ft. E NW cor. SW, Sec. 30-23-11	O.W.D.D; arranging to eepen; T. D. 3,073 ft.
H. J. Bussas' No. 7 Herndon, 1,200 ft. N, 600 ft. W, SE cor. NE, Sec. 15-21-15	Derrick.
R. G. Smitherman, trustee's No. 1 Kilgore, 1,310 ft. E, 675 ft. S, NW cor., Sec. 31-23-11	Washing to bottom; T.D. 3,062 ft.
The Texas Co.'s No. 3 Hy. Rose Merch. Co., 4,126 ft. E, 1,520 ft. S, NW cor., Sec. 31-23-11	Rigging up.

(Continued on Page 188)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

NORTH LOUISIANA

BOSSIER PARISH

Company, farm and location—	Remarks—
Corbett et als' No. 1 Murff, SE cor. NE, Sec. 18-17-11	S.D. 990 ft.
Simon Goldman's No. 1 McFarlin, SE cor. SW, Sec. 7-19-13	Tested S.W; show oil 1,000 ft.
Neil & Lanier's No. 1 Biedenharn, SE cor., Sec. 23-21-14	W.O.S.R.; 980 ft. oil in hole; T.D. 998 ft.; arranging to re-test at 998 ft.
S. P. Lanier's No. 1 Le Rosen, 300 ft. S., 1,600 ft. W. NE cor. Sec. 26-21-14	Derrick.
G. D. Nesbit's No. 1 Leonard, 1,900 ft. N, 957 ft. E. SW cor. Sec. 20-19-13	D.S. test 2,547 ft; showed oil and gas; drlg. red shale 2,568 ft.
Old River Oil Corp.'s No. 1 Byrd, 300 ft. E, 300 ft. S, NW cor., Sec. 14-19-14, formerly carried in Dixie district of Caddo Parish	Bailing; showing some gas 2,472 ft.
Walker et als' No. 1 Antrim, NW cor. SE, Sec. 28-22-13	Tested dry; W.O. 3,184 ft.
Woodmansee et als' No. 1 Bollinger, SE cor. NE, Sec. 9-22-11	Dry and abd. 3,532 ft.

CADDO PARISH

R. W. Norton's No. 1 Hill, 630 ft. N, 1,260 ft. W, SE cor. NE Sec. 33-23-16	Drlg. hard lime 4,365 ft.
I. N. Pharis, trustee's No. 1 Oden, NE cor. SE NE, Sec. 16-19-14	S.D. 3,322 ft.; topped sand at 2,396 ft.; set 6⅝-in.; T.D. 2,409 ft.
Old River Oil Co.'s No. 1 Sibley, 300 f. E, 300 ft. S. NW cor. SE, Sec. 15-19-14	O.W.D.D; formerly reported Old River's No. 1 Pittman; arranging to C.O. and set liner; T.D. 2,494 ft.
Woodley Pet. Co.'s No. 5-A Knight, 26,185 ft. E, 660 ft. N, SW cor. Township 16-12	Location.

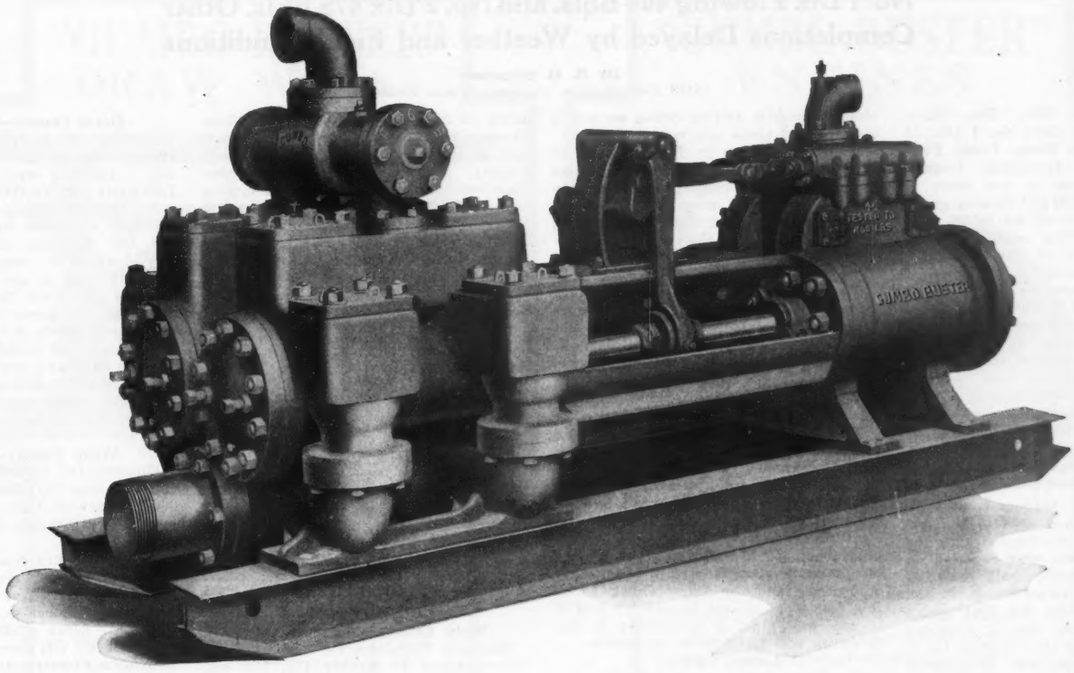
CATAHOULA PARISH

Lochnager Pet. Co.'s No. 1 Tallaferro, 572 ft. E, 396 ft. S, C, Sec. 26-9-6	S.D. 900 ft.

CLAIBORNE PARISH

El Dorado Chief Oil Co.'s No. 1 Dance, C SW NE, Sec. 27-20-7	S.D. 2,240 ft.
Leue Oil Co.'s No. 1 Taylor, Sec. 16-22-6	Derrick.
Triangle Drlg Co.'s No. 1 Kilpatrick, 660 ft. S, 660 ft. E, NW cor. SW NE Sec. 7-19-5	Drlg. lime and shale 3,952 ft.

(Continued on Page 190)



"GUMBO BUSTER" PUMP HAS STEEL WATER END TO STAND HIGH PRESSURE

This Model "G" Gumbo Buster Slush Pump is so designed that it will stand the maximum pressure in both water and steam ends. It has been operated with as high as 2000 pounds pressure on water end. This pump can be compounded without breaking. Both ends are riveted to strong steel skids in 20 different places.

Diameter of the steam end, 14½"; diameter of water cylinder, 7¼"; length of stroke, 18". The pump is the lightest of similar size and use, weighing only 10,700 pounds.

The 18" stroke reduces number of reversals thereby reducing wear on moving parts.

The steam end is made of semi-steel and is on two legs for strength. The balanced piston valve has a patented ring which fits closer and wears longer than the average ring. The cushion valves are conveniently located and are protected.

The steam and water ends are cast in four separate pieces and any piece can be replaced without replacing the whole end in case of accident. Each is cast from chrome nickel steel and has withstood pressure up to 2000 pounds.

ADVANTAGES FOR FOREIGN FIELDS

Light in weight - - Strong - - Long Stroke - - Steam and Water Ends in four pieces for easy replacement - - Economical

Write for Information

Republic Supply Company

OIL AND GAS WELL SUPPLIES

Cable and Rotary Tools

GENERAL OFFICES: HOUSTON, TEXAS

Two Darst Creek Wells for Magnolia

No. 1 Dix Flowing 400 Bbls. and No. 2 Dix 475 Bbls. Other Completions Delayed by Weather and Field Conditions

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Dec. 23.—Magnolia Petroleum Co.'s No. 1 Dix, in the Darst Creek Field in Guadalupe County, came in last week at 2,620 feet flowing at the rate of 400 bbls. after having swabbed at the rate of 800 bbls. daily. The same company completed its No. 2 Dix at 2,572 feet, 16 feet into the Edwards lime, and flowing at the rate of 475 bbls. daily. It topped the Edwards at 2,555 feet. These two were the only completions for the week though several others were ready to complete and some drilling in. One week ago it looked as though four or five would be reported in by the end of the week, but cold weather and bad field conditions held things back.

Attention late in the week was diverted from the proven area to the territory a few miles southeast where the Shell Petroleum Corp. was reported to have topped the Austin chalk at 3,190 feet in its No. 1 Denman which, it was estimated, was around 300 feet above normal and this test should therefore rivet the attention of the industry till it drills into the Edwards lime. If it makes a producer, it will prove up a structure paralleling that of the Darst Creek Field.

In the field Kirby Petroleum Co.'s No. 1 Rand-Miller topped the Edwards at 2,611 feet and the Magnolia Petroleum Co.'s No. 1 Peter Klein has set casing at 2,560 feet, and each should be in the producing column next week, and Humble Oil & Refining Co. topped the chalk at 2,178 feet in its No. 2 Denman, which is plenty high. Other tests in the field have been making hole and the number of tests has not materially changed since a week ago. There will probably not be a great many new locations made till a bunch of those now driling have gone into the pay or been abandoned.

Among the wildcats in that area the Grayburg Oil Co.'s No. 1 Wells reported last week as testing dry and is now fishing for a swab.

New Bee County Well

Bee County came to the front for the third time the last week when the Houston Oil Co. ran into some oil at 3,853-67 feet in its No. 1 Kinney, a mile east of the town of Pettus and a mile south of the discovery Pettus gas well producing at 2,900 feet. The Houston Oil Co. test was being drilled for gas and on a drill stem test it filled 150 feet with oil in seven minutes. Later it was deepened and cleaned itself but mostly with gas. Estimates are that it came in making about 25 bbls. of oil and a big volume of gas. Houston Oil Co. secured the gas lease from the Humble Oil & Refining Co., and, if the well finally settles into an oil well, it will be taken over by the Humble.

The general impression is that there is probably an oil pool there somewhere since the Mission Drilling Co. had a small amount of oil in its No. 3 Ray, a few miles farther east. This test, the No. 3 Ray, was carried down to 6,060 feet but later plugged back to where it got the first showing and was completed the past week at 4,060 feet, making a small amount of gas and about 15 bbls. of oil. It heads about twice every 24 hours. When closed in it builds up a rock pressure of 1,600 pounds. The No. 3 Ray is in Goliad County.

F. P. Zoch's No. 1 Kaufman, a little east of the No. 3 Ray, which ran into gas at 4,000 feet a few weeks ago, was drilling in late in the week. It met some difficulties getting casing set but is now in good shape and ready to test.

This Pettus area in Bee County and adjoining territory to the east in Goliad County has been coming very much to the front and the amount of showings and the amount of drilling that is going on there will likely the coming year develop something of great importance.

Bexar County

The E. G. Potter (Allan Park) No. 1 Watson, in the southern part of Bexar County, which was standing at 2,509 feet for some time, has produced a head of about 35 bbls. of oil coming from lime. It is standing a few feet into the Edwards and bridged after making the head. The bridge has not yet been cleaned out.

Two tests in Guadalupe County were last week getting some attention. Pagenkopf & Kennon's No. 1 Halm has made little hole owing to extra-hard formation. Adams & Lyles' No. 1 Zoboroski is drilling in Georgetown at 2,625 feet and, accounting for everything, seems to be running about 150 feet above normal. Owing to its position with reference to other wildcatting and the Darst Creek Field, this test is of unsual importance and if it gets any kind of a showing in the Edwards will likely start something.

Laredo District

The Texas Company's No. A-4 Guerra, in Starr County, 4 miles north of Roma, is flowing at the rate of 50 bbls. of oil a day after setting tubing. It is flowing by heads and has proven a new pool. In spite of the fact that The Texas Company owns such a large block surrounding the test there has been some outside interests attracted to the territory and some wildcats will be started at some distance to the north from The Texas Company well.

There were two other completions for the week in the Laredo territory, both gassers and in proven territory. The thing of main interest was the Killam-Duggan No. 9 Cuellar in the oil area just east of the Jennings gas field in Zapata County. This well was completed some time ago. Last week it started making more oil and flowed 45 bbls. an hour for 24 hours and the next day increased to 55 bbls. an hour and put 1,320 bbls. of oil into storage through a half-inch choke. This oil is coming from the 1,565-foot sand of that field, there being a shallower sand at 1,465 feet.

SOUTHWEST TEXAS PRODUCTION

	Bbls.
Branyon	25
Bruner	29,960
Dale	429
Darst Creek	2,950
Kingsville	211
Larremore	144
Luling	9,825
Lytton Springs	917
McMullen County	32
Medina County	24
Mirando	9,206
Somerset	1,715
Yoast	1,105
Total	56,544
Week ending December 14	55,805
Increase	739

COMPLETIONS

Webb County—Magnolia Cole

Magnolia Petroleum Co.'s No. 1 J. G. Valdez, Block 15, Survey 754, 150 feet south and west lines; total depth 2,347 feet; 25 bbls.

Duval County—Schoolfield-O'Byrne

Magnolia Petroleum Co.'s No. 11 Hahl, Block 24, Survey 250, 330 feet east line, 150 feet south line; total depth 2,315 feet; 75 bbls.

C. E. Long's (Shell) No. 3 Hahl, Block 26, Survey 250, 30 feet east line, 150 feet north line; total depth 2,328 feet; 120 bbls.

Simpson Fell Oil Co.'s No. 7 Moody, Survey 60, 2,148 feet north line, 150 feet west line; total depth 2,361 feet; 50 bbls.

Duval County—Kohler Pool

Humble Oil & Refining Co.'s No. 1 Peters, Survey 398, 1,495 feet north line, 1,495 feet west line; total depth 1,800 feet; 12,000,000 feet of gas.

Duval County—Cole Pool

Simms Oil Co.'s No. 7 Dinn, Survey 454, 660 feet west line, 660 feet north line of SW NW; total depth 1,767 feet; 20,000,000 feet of gas.

Allied Gas Co.'s No. 2 Dinn, Survey 665, 300 feet north line, 300 feet east line; total depth 1,745 feet; 6,000,000 feet of gas; 435 pounds rock pressure.

J. G. Mackay's No. 2 Dinn, Block 1, Survey 454, 450 feet north line, 160 feet east line; total depth 1,762 feet; 30,000,000 feet of gas; 440 pounds rock pressure.

Webb County—Cole Pool

Houston Oil Co.'s No. 1-H R. Benavides, Survey 701, 666.2 feet south line, 666.3 feet east line; total depth 2,291 feet; 25,000,000 feet of gas; 500 pounds rock pressure.

O. W. Killam's No. 14 Bruni, Survey 5, Adams Subdivision, Bruni Lands, Mariano Arispe grant, 150 feet northwest line, 150 feet southwest line, Block 11; total depth 2,327 feet; 20,000,000 feet of gas; 700 pounds rock pressure.

Nueces County—Agua Dulce Field

Agua Dulce Oil & Gas Co. and Houston Gulf Gas Co.'s No. 1 Ollie Purl, 450 feet from south and west lines of NE, Section 6, Ross Peters Subdivision, plugged back to 2,033 feet; 80,000,000 feet of gas.

ABANDONED TESTS

Caldwell County—Bruner Field

Alexander and Smith Oil Co.'s No. 1 G. W. New, in the J. Hinds Survey, 50 feet to north and west lines; dropped from report until work is resumed.

Duval County—Schoolfield O'Byrne

S. & O. Oil Co.'s No. 9 Hahl, Block 22, Survey 250, 450 feet north line, 150 feet west line; location temporarily abandoned.

Webb County—Schott Pool

Livingston & Payne's No. 1 Guerra-Ochoa, Survey 58, 1,371 feet east line, 470 feet south line; total depth 2,100 feet; abandoned, dry.

Webb County—Magnolia-Cole Pool

Cole Petroleum Co.'s No. 67 Benavides, Block 4, Survey 412, 313 feet east line, 160 feet north line; total depth 2,360 feet; abandoned.

Jim Hogg County—Henne-Winch-Fariss

W. R. Shankle's No. 3 Holbien, Block 22, Clarkson & Carscaden Subdivision (Hogg Ridge) Share 3, Las Animas grant, 90 feet north line, 150 feet west line; total depth 2,200 feet; abandoned; sand at 2,170 feet tested dry.

NEW LOCATIONS

Caldwell County—Buchanan

Al Buchanan's No. 1 Medlin, 150 feet from south and west lines of farm, spudded in.

Zapata County—Charco Redondo

W. R. Duke's (Duke & Evangeline) No. 2-B Martinez, Block 17, W. R. Duke Subdivision, Charco Redondo grant; drilling at 300 feet.

Duval County—Kohler Pool

Humble Oil & Refining Co.'s No. 39 Kohler, Survey 165, 1,650 feet south line, 330 feet east line; location.

Guadalupe County—Darst Creek

Empire Gas & Fuel Co.'s No. 1 Dowdy, in the Jacob Darst Survey, 150 feet each way from northeast corner of E. A. Dowdy 40-acre tract; total depth 2,200 feet; drilling in chalk.

Humble Oil & Refining Co.'s No. 1 Baker, in the Jacob Darst Survey, 150 feet each way from the southeast corner

(Continued on Page 195)

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Alexander Boynton's No. 1 Fee, in the John Sharp Sur., 3,645 varas E W line, 2,070 varas S N line of Sur., SW end of Somerset Field ..... 2,000 ft. in Austin chalk.

BASTROP COUNTY

Johnson Brothers' No. 1 W. C. Bryan, Stidham Sur., 5 miles W from Red Rock ..... T. D. 2,400 ft.; coring base of Georgetown lime.

B. L. Batts et al's No. 1 A. A. Alexander, W. M. Eastland Sur., 1,350 ft. from W line, 750 ft. from S line ..... Shut down 1,325 ft.

Humble Oil & Refining Co.'s No. 1 C. W. Corbell, J. G. Lentz Sur., 150 ft. to NE line of lease, 4 miles N from Red Rock ..... Dropped until drilling is resumed.

Abernathy et al's No. 1 A. Aldridge, in the Martha Barker Sur., 2,750 ft. SE and 450 ft. NE of 241-ac. tract or 2,000 ft. SW and 4,500 ft. NW of Sur. ..... Drlg. 320 ft.

Owens et al's No. 1 Goodman ..... Dropped until drilling is resumed.

BEE COUNTY

Houston Oil Co.'s No. 1 McKinney, L. C. Randolph Sur. ..... T. D. 3,853-67 ft.; sand showed 150 ft. of oil in hole on drill stem test.

The Texas Company's No. 2 Tipps ..... T. D. 420 ft.; standing.

The Texas Company's No. 3 Tipps ..... Drlg. in sand and shale 1,000 ft.

BEXAR COUNTY

Burton Oil Co.'s No. 1 P. H. Shook, in Monjares Sur., 3,150 ft. to E line, 150 ft. to N line of farm, 10 miles SE from San Antonio ..... Erecting steel derrick.

Guy G. Fisher's No. 1 S. L. Beck, P. W. Hays Sur. ..... Dropped until drilling is resumed.

F. H. Eckert's No. 1 Sandemer, Sur. 52 ..... Drlg. 615 ft.

Penn-Tex Oil Co.'s No. 1 Kate May, F. R. Desauge Sur. No. 134 ..... T. D. 2,060 ft.

Ross E. Fenton Co.'s No. 1 Clarence V. Uhl, 150 ft. to S and W lines, 6 miles SE from San Antonio ..... Laying a water line.

Moore-Jauer's No. 1 Holly R. Ellison ..... Drlg. in Travis Peak lime 1,810 ft.

E. G. Potter's No. 1 Watson, B. Martinez Sur. ..... Dropped from reports until drilling is resumed.

W. C. Sutherland's No. 1 J. Halberdier, Sur. 57, located 150 E of Cen of W line ..... Dropped from reports until work is started.

BLANCO COUNTY

Ashe & Marshall's No. 1, 5 miles S Johnson City ..... Shutdown 85 ft.

BROOKS COUNTY

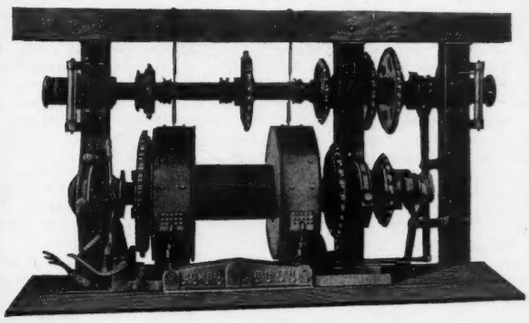
Amos Dinn, trustee's No. 3 Garcia-Ramosi, Share B-1, Las Mestenas y Gonzales grant, 1,300 ft. S. line, 2,325 ft. W line of share B-1 ..... T. D. 1,485 ft.; drlg.

Milam Drilling Co.'s (No. 5 core test) (No. 10 deep test) Jerry Reiley, San Antonio grant, SW Brooks County ..... Drlg. 1,700 ft.

Humble Oil & Ref. Co. and Shell Petroleum Corp.'s No. 1 Singer, Alta Verde Subd., 2,500 ft. S of N line, 333 ft. W of E line of Sec. 312 ..... Rigged up to go.

(Continued on Page 187)

"GUMBO BUSTER" DRAW WORKS



This newly designed roller bearing draw works has a brake on which the leverage is compounded 2½ to 1. The brake bands are 13" wide and are equalized. The compound leverage and wide equalized brake bands increase the life of the brake linings and enable one man to easily handle long strings of pipe. All clutches are operated from driller's position by conveniently located foot pedals.

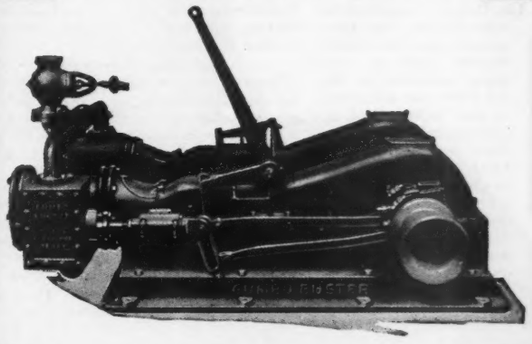
SPECIFICATIONS

1. 7" Line Shaft and 8" Drum Shaft of heat treated steel.
2. Drum operates on two large roller bearings enclosed in two self-aligning bearing housings.
3. All brake and clutch shifting rigging mounted on one base which can be moved as a unit, facilitating setting up draw works and assuring proper rigid assembly.
4. Catline Rollers are extra large in diameter and operate on roller bearings.
5. Clutch blocks and sprockets of chrome nickel steel; clutch blocks heat treated; heavy steel Jack Posts.

This is the best draw works that can be bought for foreign fields. Because all brake and clutch shifting rigging is mounted on one base it can be moved as a unit and quickly set up. Because of the compounded leverage of the brake, the "safety factor" is increased as one man can have absolute control of the load. Because of wide equalized brake bands the life of the brake lining is increased.

WRITE FOR INFORMATION

"GUMBO BUSTER" ENGINES



The "Gumbo Buster" 12"x12" Twin Cylinder Drilling Engine with flat slide valves prevents wet steam from injurying steam end of engine for this type of valve unseats while the piston valve will not unseat when a shot of water strikes it. Heavy steam traps are eliminated, making the engine light, compact and easy to move.

This was the first engine to be enclosed and working parts run in a bath of oil. Constant lubrication is thus assured and dirt cannot get into parts.

The heavy forged one piece double throw crankshaft is fully supported by four heavy main bearings which positively reduce whip and vibration. Outside valve rigging is protected from injury and is easily adjusted or repaired.

By attaching regular flywheel engine can operate in emergency on one cylinder. This feature may prevent the loss of a well should one cylinder break down while drill pipe is in hole.

This compact, sturdy and light weight engine is easy to move. It has proven its dependable service and economy of operation many times. For these reasons it is particularly adapted to use in foreign fields.

Write today for details of this engine which 48½% of contractors in the newest and severest field have endorsed and are using.

Republic Supply Company

OIL AND GAS WELL SUPPLIES

Cable and Rotary Tools

GENERAL OFFICES: HOUSTON, TEXAS

New Producing Area in Lea County

Continental Well East of Lea Pool Starts Off Flowing About 500 Bbls. a Day, With 70,000,000 Feet of Gas

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Dec. 23.—A new producing area in Lea County, southeastern New Mexico, has been opened up in the Eunice district, east of Lea Pool, northwest of the Jal Pool and southwest of the Hobbs Pool in Continental Oil Co.'s No. 1 A. E. Meyers. At 4,001 feet it began flowing 20 to 25 bbls. of oil per hour and 7,000,000 feet of gas per day.

The Humble Oil & Refining Co.'s No. 2-A Lindley, in the Jal Pool, made 174 bbls. first 24 hours with 20,000,000 feet of gas. In Eddy County, the Lockhart Oil Co.'s No. 1 McAllister, in the South Artesia area has been abandoned, and Lockhart and others' No. 1 Parke, in the Maljamar area, missed the pay and will be plugged.

While there were no important completions in Colorado, several interesting wildcats are at critical stages and results probably will be known before the end of the year. Reports that the Fitzsimmons' well near Denver found the Pierre shale only 2,800 feet thick as against twice that thickness in the Boulder Field has attracted attention. Wildcats in the remote areas continue to shut down for the winter.

In Wyoming, the Midwest's deep test in Salt Creek has killed the flow of oil in the Sundance and resumed operations. The Mule Creek Field has shut down for the winter. A test to the Madison lime is to be drilled on the Notches Dome in Natrona County, and the Midwest is starting another well to that horizon on the Frannie Dome in Park County.

NEW MEXICO

The Continental Oil Co.'s discovery well in Lea County, southeastern New Mexico, No. 1 A. E. Meyers, is in NE SW SW, Section 17-21-36, in the Eunice district, 14 miles east and a little south of the Lea Field, 18 miles southwest of the Hobbs Pool and 25 miles to the northwest of the Jal area. A break in the lime was encountered at 4,001 feet and the well began flowing by heads making between 20 and 25 bbls. of oil per hour and 70,00,000 feet of gas per day. The gas is coming from horizons above the oil pay, the first of importance being at 3,240 feet where it showed for 10,000,000 feet. This was followed by 29,000,000 feet at 3,270 feet and increases at 3,695-3,705 feet and on down to the pay.

The discovery is regarded as opening a new pool and yields valuable information on the trend of the production through Lea County. The location is 2½ miles to the north of the Marland Oil Co.'s No. 1 Lockhart, NE NW NW, Section 31-21-36, which was completed last March at 3,990 feet with a production the first 24 hours of 278 bbls.; 4 miles north and east of the Empire Gas & Fuel Co.'s No. 1 Closson, a big gas well; and 4½ miles northwest of the Gypsy Oil Co.'s No. 1 Mattern, SW SE, Section 24-21-36, which was plugged back to 3,865 feet last October and completed as a 4,000,000-foot gas well making 10 bbls. of oil.

In this same township and range, the Gypsy Oil Co.'s No. 1 Ramsey, SW cor., Section 34-21-36, was completed last January at 3,856 feet, after plugging back, as a 20,000,000-foot gasser. Drilling wells in the Eunice district include the following: The Empire Gas & Fuel Co.'s No. 1 Closson, NE NW SE, Section 6-22-36, is cementing an open hole at a total depth of 3,703 feet, the bottom being in lime. The well was making 65,000,000 feet of gas before cementing. The Continental Oil Co.'s No. 1 William Meyers, SW cor. NW, Section 28-22-36, is shut down at 3,750 feet.

Confusion Over Names

There has been confusion in the past in the descriptions of various drilling areas in Lea County owing to the use of different names by different companies. Some of the names given to areas in the earlier prospecting when Lea County was mostly a wilderness with a ranch house here and there, or scattered post offices to distinguish the different districts, still are retained by some of the companies. Others have adopted new names as the exploration advanced and areas became better outlined. The names used here are the ones most generally adopted.

The Jal area, in which is located the Jal Pool, comprises Townships 25 and 26 south, Ranges 36, 37 and 38 east. In this area, the Humble Oil & Refining Co.'s No. 2-A Lindley, C SW SW, Section 13-25-36, is a completion at a total depth of 3,400 feet. At 3,346 feet it gauged 20,000,000 feet of gas. It was then deepened and the oil came in at 3,370-3,400 feet, making 174 bbls. the first 24 hours. It is at present averaging 150 bbls. a day. It is an offset to a producer. The elevation is 3,123 feet and the top of the brown lime was at 2,891 feet.

The Continental Oil Co.'s No. 2 Sholes, SW cor. NW, Section 13-25-36, has rig up, and the Humble Oil & Refining Co.'s No. 3-A Lindley, NW cor. SW, Section 13-25-36, also has rigs up. These wells are offsets to each other and less than half a mile to the north of the new producer.

The Empire Gas & Fuel Co.'s No. 1 Lindley, C NE SE, Section 14-25-36, one-fourth of a mile to the northwest of the Humble's No. 2-A, is drilling at 3,131 feet in dark gray sandy lime at which depth it has a show of oil and gas. The Magnolia Petroleum Co.'s No. 1-X Lindley, SE cor. NE, Section 26-25-36, is shut down for engine repairs at 498 feet.

Cooper Area

The Cooper area lies just to the north of the Jal Field and includes Townships 23 and 24 S, Ranges 36, 37 and 38 E. In this district, Cranfill & Reynold's No. 1-C State, SW SE SW, Section 16-23-36, is building road to location, and the Texas & Pacific Coal & Oil Co.'s No. 3 State, NW SW NW, Section 21-23-36, is building rig.

The Eunice area, in which is located the Continental Oil Co.'s new producer, is to the north of the Cooper area, and includes Townships 21 and 22 S, Ranges 36, 37 and 37 E, and Township 20 S, Ranges 37 and 38 E.

The Hobbs area, containing the Hobbs Pool, lies still farther to the north and includes Townships 18 and 19 S, Ranges 37, 38 and 39 E. In this district, the Ohio Oil Co.'s No. 1 State, NE SE SW, Section 9-19-38, which was completed at 4,208 feet after plugging back from 4,312 feet, is pumping an average of 30 bbls. of oil and 12 bbls. of water per day. The quantity of water has remained the same, but there is some decrease in the quantity of oil. The Ohio's No. 1 Price, NE cor. NW, Section 7-19-39, near the Texas line, which has had rig up since last spring, is an abandoned location due to a government ruling that there should be no drilling at this time following extension of permit.

Probably Next Completion

The Midwest Refining Co.'s No. 24 State, NE SE SW, Section 10-19-38, an offset on the west to Walker's No. 1 Terry, a producer, is drilling at 4,010 feet in lime. It had shows of gas at 2,925 and 2,965 feet. It probably will be the next completion in the Hobbs Field. The same company's No. 13 Terry, SE NE SW, Section 10-19-38, one location to the north of No. 24 State, is drilling at 2,952 feet in anhydrite, and the Shell Petroleum Co.'s No. 1 Thorpe, SW NW SE, Section 10-19-38, one location east of the Midwest's 13 Terry, and one location north of Walker's No. 1 Terry, is drilling at 2,925 feet in brown lime and anhydrite.

The Humble Oil & Refining Co.'s No. 1 Bowers, C NE SE, Section 30-18-38, 3 miles northwest of production, is drilling at 3,767 feet in anhydrite and gypsum, and the Ohio Oil Co.'s No. 1 State, NE cor. SW, Section 30-18-38, has cellar completed. Harrison and others' No. 1 Tatum, NW SW SW, Section 35-18-38, is shut down at 275 feet, and the Midwest Refining Co.'s No. 6 Wright, NW cor. SW, Section 14-19-38, is shut down at 1,672 feet in anhydrite to change over to cable tools.

Fisher & Lowrie's No. 1 State, NE cor. NW, Section 11-18-36, west of the Hobbs area, is bottomed at 2,095 feet in salt and waiting for cable tools, and the Penn Oil Co.'s No. 1 State, NE, Section 21-19-36, is drilling at 3,890 feet in anhydrite.

The Lovington area, which embraces eight townships to the north and northwest of the Hobbs area, has one active operation in the Barnsdall Oil Corp.'s No. 28-16-38, bottomed at 1,810 feet in red sand and lowering the 10-inch.

The territory referred to in the foregoing report is all on the east side of Lea County and embraces an area about 65 miles long by 15 to 20 miles wide.

Lea Area

The Lea area, formerly referred to as the Sam Simion district, a general designation that was not sufficiently inclusive embraces Township 20 S, Ranges 33 and 34 E, and parts of Township 21 S, Ranges 32, 33 and 34 E. The Lea Pool, sometimes referred to as the Lynch Pool, is in this area and just to the east of the Lea Townsite.

This is the most active area in Lea County at present with two producing wells, one of which is pumping 2,200 bbls. a day. Driling operations include the following: Continental Oil Co.'s No. 1 State, NW cor., Lot 12, Section 1-21-33, driling at 3,660 feet in salt, and the same company's No. 2 State, SW cor., Lot 12, Section 1-21-33, is rigging up. Snowden & McSweeny's No. 1 State, NW cor. SW, Section 1-21-33, is drilling at 1,575 feet in the red beds, and the Amerada Petroleum Corp.'s No. 1 State, SW cor., Lot 7, Section 1-21-33, is drilling at 3,600 feet in lime. The base of the salt was at 3,500 feet and the top of the brown lime at 3,539 feet. The elevation of this well is 3,794 feet.

The Texas Production Co.'s No. 1-B State, SW cor., Lot 5, Section 1-21-33, is drilling at 1,675 feet in the top of the anhydrite with the 8¼-inch set at 1,625 feet. The Texas Production Co.'s No. 1-A State, SE cor., Lot 8, Seciton 2-21-33, is drilling at 3,430 feet in lime, and its No. 2-A State, SW cor., Lot 8, Section 2-21-33, recemented at 1,780 feet. Cranfill & Reynolds' No. 2-B State, NW cor., Lot 9, Section 2-21-33, is drilling at 3,635 feet in lime, and the same firm's No. 3-B State, SW cor., Lot 9, Section 2-21-33, is drililng at 3,150 feet in salt. Cranfill & Reynolds' No. 1-D State, SE

(Continued on Page 172)

OPEN IMPORTANT NEW GAS FIELD IN EAST CENTRAL ALBERTA AREA

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Dec. 21.—A new gas field of importance was opened in East Central Alberta when the Duluth Syndicate's No. 1, LSD 8, Section 29-48-10w4, unexpectedly encountered a heavy gas flow at 2,083 feet. The flow is estimated at 30,000,000 feet. It is apparently a dry gas, similar to the gas production of the Wainwright Field, and from the same horizon. It is about midway between Wainwright and Viking, and about 10 miles north of Kinsella. The test was primarily for oil, as no immediate market for additional gas production is in sight; and the test may be deepened, for oil.

In the South Turner Valley Field, Merland Oil Co.'s No. 1, LSD 13, Section 27-18-2w5, is on steady production and making 100 bbls. a day recovery from the wet gas flow of 14,000,000 feet encountered in the Dalhousie sands at 4,453 feet depth. It is claimed the production is a crude naphtha testing 77 gravity, though it has a slight amber color. If so, this is the first time crude naphtha has been encountered in the Dalhousie sand horizon. A 500-bbl. tank is being erected, doubling the previous storage capacity; and a pipe line will probably be laid. If production holds up, Merland's No. 1 will be left at the present depth and Merland's No. 2, 400 feet south of No. 1, will be drilled to the limestone. Experiments are being made with pressure adjustment to increase production, but so far without appreciable success.

Midway between the South and Central Turner Valley areas, Royalite Oil Co.'s No. 23, NW, Section 31-19-2w5, last week looked for a time like a big producer. At 5,089 feet depth, 269 feet in the lime, the mud and oil in the hole were bailed, and a wet gas production estimated 10,000,000 feet a day was indicated. The well was hooked up with the separator, but failed to hold up on a steady production test, and is now being drilled deeper.

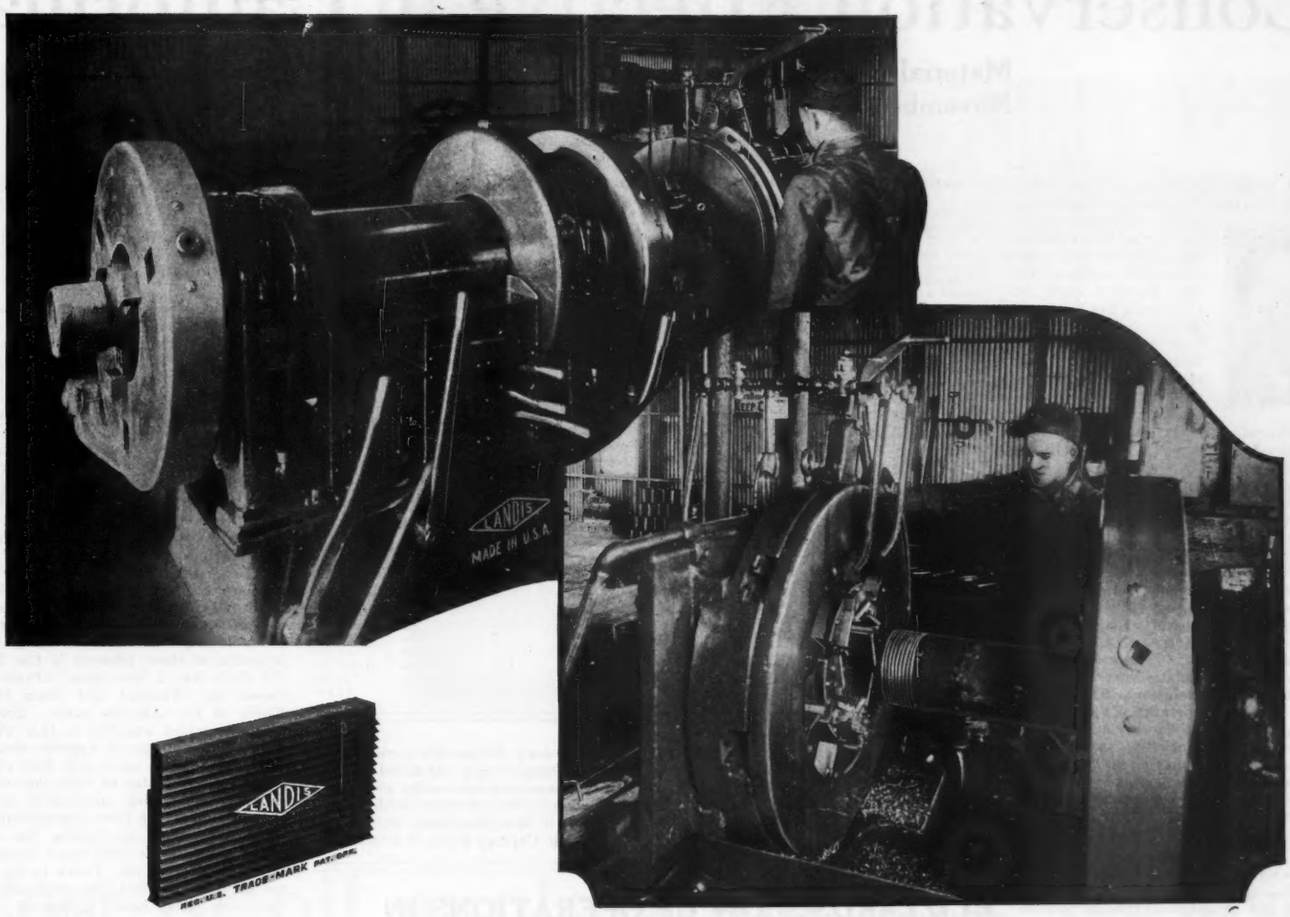
Imperial Tests

In the South Turner Valley, Mayland Oil Co.'s No. 1, LSD 10, Section 17-19-2w5, has finished an unsatisfactory production test at 5,970 feet, 529 feet in the lime, and is preparing to drill deeper.

New Tests

In the South Turner Valley, Calmont Oils, Ltd., after a temporary cessation of activity is starting a number of new tests on the Dallas tract, LSD 11, Section 20-19-2w5, fairly close to the Home producers. Contracts have been let to the Turner Valley Construction Co. for four new wells to be carried with cable tools to 1,600 feet each. After this depth is reached a further contract may be let, or the tests may be completed by Calmont

(Continued on Page 171)



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Conservation Effective in California

Material Decline in Production Shown by Figures for November. Necessity for Co-operation Now Vital

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Dec. 21.—The monthly statement showing production and development activities in California during the month of November is tangible evidence that conservation work in California has become a definite factor. Heretofore conservation has been more or less conversation due to the fact that independent operators failed to co-operate.

The November report indicates a very pronounced improvement and if all operators would only sit tight and meet their moral obligations to curtail, the present chaotic condition must of necessity give way to stabilization. It should be a source of personal gratification to every operator at Santa Fe Springs, Long Beach, Ventura Avenue, Seal Beach and Elwood who has co-operated in the curtailment movement to note the improvement shown. Co-operation is even more urgent than heretofore and a strict fulfillment of obligations is necessary in order to carry conservation work forward to a successful conclusion. There must be no let up in curtailment work, notwithstanding the satisfactory achievement registered during the first month's operations. The situation at Santa Fe Springs is especially critical and warrants the utmost consideration on the part of each operator.

California produced 21,317,540 bbls. during the month of November, as compared with 26,895,160 bbls. during October. This represents a decline of 157,001 bbls. in the actual daily production between the two periods in question, the output in October averaging 867,586 bbls. per day, while the production in November was 710,585 bbls. daily. The decline in daily production of 157,001 bbls. during November does not entirely reflect the total improvement shown as a result of conservation work in view of the fact that California would have produced well in excess of 1,000,000 bbls. per day during November if drilling and production activities had continued unabated. It goes without saying of course that California refiners and pipe line companies could not have coped with this abnormal production.

Stocks Reduced

Storage facilities of most major companies were filled almost to capacity when curtailment work was undertaken in California during the latter part of October and it is extremely doubtful if several companies could have continued to store their normal surplus for another month. This situation was alleviated to a certain extent by curtailment work during November as the decreased production permitted a draft on stocks of 1,096,094 bbls. The storage of all commodities declined during the month of November with the exception of gasoline stocks which increased 300,205 bbls. Heavy crude and refinery residuum decreased 515,993 bbls., while light refining crude was reduced 473,437 bbls. Naphtha distillates, tops, were reduced 230,955 bbls., while all other fluid stocks, including mineral oils, lubricants, kerosene, decreased 175,914 bbls. Total fluid stocks on hand November 30 totaled 183,748,450 bbls., as compared with 184,844,544 bbls. in storage October 31. Heavy crude and fuel oil stocks aggregated 111,886,479 bbls. at the close of November and light refining crude, 42,255,303 bbls. Gasoline storage totaled 16,485,197 bbls., naphtha distillates 3,275,219 bbls. and all other stocks 9,846,252 bbls.

With the exception of the new oil field just opened up by the Ohio Oil Co. at Playa Del Rey in Los Angeles Basin, wildcat exploration in California during the past year has not been particularly satisfactory from the standpoint of additional discoveries, as only two new fields were opened up during this period. The Santa Barbara Mesa Field failed to come up to expectations due to the absence of oil in commercial quantities with the result that it has practically been abandoned. The Capitan Field of Santa Barbara County is still an unknown factor as far as potentiality is concerned but developments tend to indicate the existence of commercial production, in as much as the discovery well showed an initial of 150 bbls. per day from 1,446 feet.

Deep zone exploitation and extension work in proven fields featured development work during 1929 and this activity greatly increased production during the period in question. Deep zone exploration was especially pronounced at Santa Fe Springs where several deeper horizons were opened during the year to date. Extension work has played a very important part in the development of production in the Elwood Field of Santa Barbara County and in the Midway-Sunset Field of Kern County, where the productive limits were extended at two different points.

Important Wildcats

There are several important wildcats under way in California which may result in the discovery of one or more new fields during 1930. One of the most interesting of these projects is the Union Oil Co.'s No. 1 Sansinina, situated between the Whittier and Brea Olinda Fields of Los Angeles basin. The significance which attaches to this wildcat lies in the fact that it appears almost a certainty to open up a new field at this point. As a matter of fact, this well is capable of yielding production at the present time. The first favorable indications were found in digging the cellar and at 65 feet the well began flowing a small quantity of oil. Down to its present depth, 1,378 feet, the predominating formation has been a brown shale streaked at rather frequent intervals with several inches of good oil sand. This well is one of the few projects in California where oil sand has literally been found at the grass roots. It seems logical therefore to assume that subsequent drilling will reveal the existence of commercial production. Structurally and geologically this area has unusual merit and the Union seems destined to add another field to its present list. It might not be amiss to mention the fact in commenting on the probable discovery of a new field at this point that the Union Oil Co. owns the mineral rights in fee and controls the entire probable productive area. The property involved consists of 3,761 acres in one block thereby precluding development work by other operators.

Santa Fe Springs

Umpire H. P. Grimm's third report covering curtailment activities at Santa Fe Springs credits this field with a potential daily production of 316,522 bbls. on December 16. Subsequent completions in the deep zone have greatly increased this potential and operators are experiencing considerable difficulty in getting down to their allowable production. In accordance with the curtailment agreement to reduce Santa Fe Springs production to a maximum not to exceed 150,000 bbls. daily, operators will be obliged to effect a curtailment of 47.40 per cent from the established potential in order to reach this allotted output. During the period from November 30 to December 14 operators produced a total of 449,123 bbls. in excess of the allowable production for the period in question. This represents a surplus production of 28,071 bbls. per day. The umpire's report indicates that the Wilshire and affiliated companies produced 295,527 bbls. of this total excess of 449,123 bbls., while the next offender was George F. Getty with an excess of 60,334 bbls., followed by the General Petroleum with 24,332 bbls. During the next bimonthly period from

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	997,250	2,988,419
Fuel oil	.....	.....	.....	.....	468,825	143,471
Diesel and gas oil	80,433	11,490	98,338	14,048	2,982,895	1,996,867
Gasoline	328,168	46,881	477,198	68,171	20,636,856	14,271,893
Kerosene	..	.....	..	.....	49,750	.....
Naphtha distillate	.....	.....	.....	.....	81,750	339,100
Coastwise—						
Crude oil	299,000	42,714	1,381	197	24,767,597	24,011,695
Fuel oil	538,527	76,918	340,648	48,664	19,398,477	16,922,913
Diesel and gas oil	23,476	3,354	12,850	1,836	1,219,010	1,120,611
Gasoline	432,030	61,719	249,560	35,651	11,259,079	9,703,687
Kerosene	.....	.....	.....	.....	70,581	67,435
Naphtha distillate	.....	.....	.....	.....	.....	239,071
Exports—						
Crude oil	.....	.....	128,810	18,401	5,844,009	2,103,835
Fuel oil	341,584	48,798	540,709	77,244	18,614,845	21,568,604
Diesel and gas oil	.....	.....	151,086	21,584	2,752,717	2,297,059
Gasoline	413,224	59,072	399,146	57,021	12,066,377	7,598,705
Kerosene	98,195	14,028	4,950	707	3,133,321	3,892,932

TANKER SHIPMENTS FROM SAN FRANCISCO, TO ATLANTIC, GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	418,188
Gasoline	.....	.....	.....	.....	2,275,638	2,231,234
Lubricants	.....	.....	.....	.....	138,706	277,151
Coastwise—						
Fuel oil	32,416	4,631	.....	.....	3,028,803	3,350,275
Diesel and gas oil	.....	.....	.....	.....	366,004	279,197
Gasoline	144,517	20,645	85,740	12,249	5,137,831	4,721,334
Kerosene	.....	.....	.....	.....	205,284	228,923
Exports—						
Crude oil	.....	.....	4,925	704	126,528	96,259
Fuel oil	.....	.....	.....	.....	841,631	2,222,314
Diesel and gas oil	.....	.....	.....	.....	393,132	56,180
Gasoline	87,480	12,497	65,511	9,359	5,416,299	4,471,496
Kerosene	..	.....	..	..	624,180	786,553
Lubricants	.....	.....	.....	.....	29,795	33,525

BLIZZARDS SLOW UP OPERATIONS IN MUSKEGON AND MT. PLEASANT AREAS

By Special Correspondent

MUSKEGON, Mich., Dec. 23.—Drilling operations in the Muskegon and Mount Pleasant Fields of western and central Michigan were slowed up last week by wintry weather which brought with it low temperatures and blizzards. Two small oil wells were brought in at Mount Pleasant in the Dundee formation, while one small oil well and a small gasser were the only completions in the Muskegon Field.

The Pure Oil Co.'s No. 7 W. D. Gibson, SW NW, Section 12-14n-3w, made 75 bbls. initial in the Dundee. The formation was topped at 3,527 feet, pay sands were struck at 3,560 feet and 3,590 feet is the bottom of the hole.

The Pure Oil Co.'s No. 1 Fred DeStoop, SW NW, Section 1-14n-3w, also was good for 75 bbls. initial production. Dundee limestone was topped at 3,530 feet, pay sands at 3,560 feet and the bottom of the hole is at 3,598 feet.

The largest completion is the Muskegon Field was the Rygo Oil Co.'s No. 1 Stanley Daniloff, NE NW, Section 8-10-16, Muskegon township, which came in at 65 bbls. a day in the lower Traverse pay sands. The well was shot at 1,914 feet.

The only other completion was the Muskegon Development Co.'s No. 1 Fred Hartman, NE NW, Section 9-10-16, Muskegon township, which was deepened from an an original upper Traverse oil well to a small gasser in the lower Traverse. Gas was struck at 1,877 feet and the well is estimated to be good for but 100,000 feet a day. It will be produced, however, because of the shortage of gas in the Muskegon Field.

Tested As Pumpers

Three wells in and near the proven field struck enough oil to fill up 300 to 400 feet in the hole and are being tested as possible small pumpers.

The Van Buren Development Co.'s No. 1 Hubbel-Bascom-Leahy, SE SW, Section 3-10-16, about a mile east of present production in a semiwildcat location, was the most interesting of the three. It was cased at 2,077 feet and struck Dundee pay sands at 2,082-84 feet, filling up about 400 feet with oil. It has been swabbing a few barrels of oil daily and probably will be placed on the pump.

Another edge well which had a good show of oil was the Section Ten Syndicate's No. 1 J. J. Fagan, SE SW, Section 10-10-16, Muskegon township. Pay sands of the lower Traverse formation were first encountered at 1,873 feet and at 1,885-92 feet a second sand, which filled up the hole about 300 feet with oil, was struck. It was not completed.

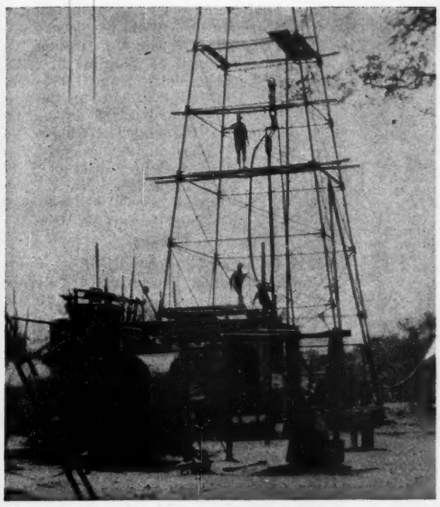
Nelson & Witt, Inc., struck a similar pay in the upper Traverse in their No. 4-A George Fenner, SW SE, Section 11-10-17, Laketon township, at 1,690 feet. The well was drilled to 1,750 feet and had about 400 feet of oil and some water in the hole. It may be produced at that level or drilled to the Dundee.

The Wiser Oil Co., which drilled one dry hole in Allegan County, will try another on the Lyle & Doris Allen lease, NE NE, Section 33-1n-11w, Gun Plains Township, Allegan County. The other wildcat will be P. A. Meyers and others' No. 1 T. F. Crandall, SW NW NW, Section 14-14e-3n, Howel township, Livingston County.

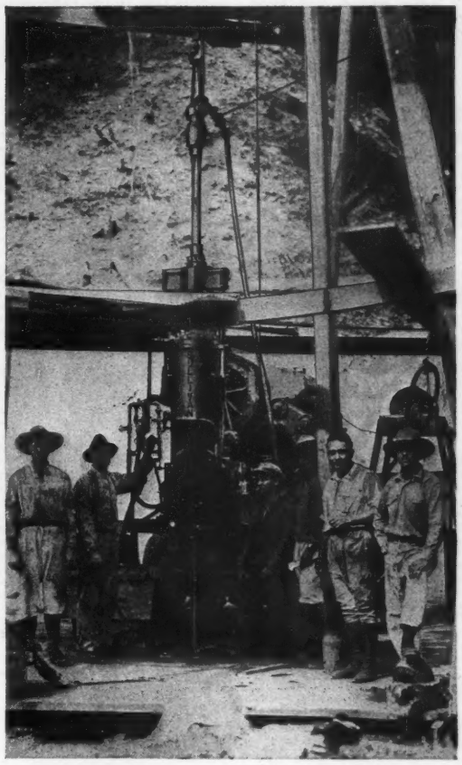
Caving Hole Delays Drilling

Drilling of the Michigan Petroleum Co.'s No. 1 C. E. Moe, wildcat well near Ravenna, which had a flow of gas from the Cincinnati series, has been delayed

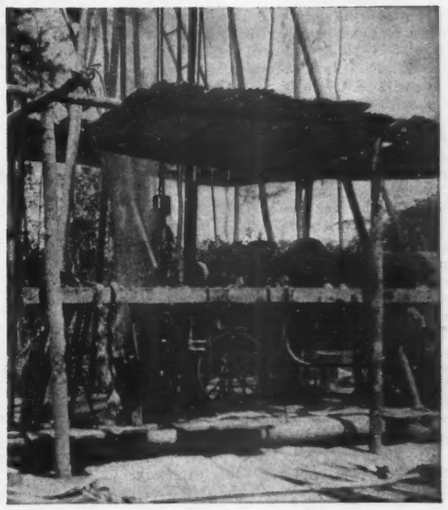
(Continued on Page 196)



Sullivan "60" Core Drill in Venezuela. In one month and twenty-six days the user set 200 feet of 16-in. casing; 1000 feet of 11¾-in.; 2495 feet of 8⅝-in.; and 4050 feet of 6⅝-in.



Sullivan Structure Core Drill at work in Argentina. The speed of drilling and moving with these Sullivan machines is well known to oil men. One company (in Oklahoma) drilled 25,610 feet and moved 60 times, in 6 months, with a Sullivan Structure Core Drill.



A Sullivan portable drill is shown above, at work in the jungles of Borneo. It has just struck oil at 512 feet, setting 46 feet of 7-in. casing, 242 feet of 4½-in. and 390 feet of 3-in. From spudding in, to the strike, only 23 eight-hour shifts were required. A cable rig 100 yards away took a year to complete a hole to 1000 feet.

Cost of oil exploration now reduced in every oil field of the world

Rich leases—quick spotting of the favorable "highs"—test wells at a fraction of the old cost. Those are the things Sullivan Core Drills have given to shrewd oil men all over the world.

CHEAPER TO CORE DRILL THAN PAY RENT

No longer is it necessary to lease land on a guess—and pay rent while drilling wildcats.

Core drilling will tell you immediately whether favorable structure is present, or not. And core drilling fees are much lower than rent.

CORE DRILLING PICKS THE LIKELY SPOTS

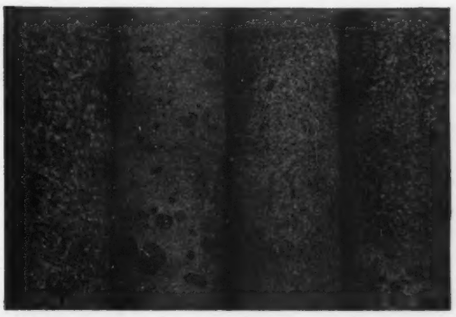
Once the promising tract is leased, geologists core drill to establish the likely spots for wells.

A Sullivan Structure Drill reveals the exact elevation of the key bed at various points so that trends can be defined and favorable "highs" charted.

DRILLING TEST WELLS AT A FRACTION OF OLD COST

A third way oil men are reducing the cost of oil exploration, is by drilling test wells with Sullivan Core Drills.

Holes 3 or 4 inches in diameter can be drilled, with only a few changes in sizes of casing. Hard or soft material is drilled rapidly as encountered, with no change in equipment. And the thousands of dollars saved in time, equipment, labor, and transportation, easily pay the cost of reaming holes when strikes are made.



SULLIVAN CORE DRILLS IN EVERY OIL FIELD

Sullivan Core Drills have reduced the cost of oil exploration in Santo Domingo, Venezuela, Peru, Colombia, Ecuador, Argentina, Mexico, Algeria, India, Borneo, Canada, Portuguese East Africa, Roumania, Russia, Persia, and all oil fields of the United States.

NEW PICTORIAL BOOKLETS NOW AVAILABLE

New Sullivan Booklets, containing interesting illustrations and actual cost figures on Structure Testing, and Deep Hole Drilling, will be mailed free on request. Ask for

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AGENT FOR OKLAHOMA AND KANSAS: GEORGE FAILING, GARBER, OKLA.

December 16 to December 31 the General Petroleum will be allowed to produce 25,475 bbls. a day in conformity with the curtailment agreement. The Union Oil Co.'s allowable production is fixed at 21,940 bbls. daily, followed by the Standard Oil Co. with an allowable of 14,064 bbls. per day. The Texas Company is next in line with an allowable of 13,548 bbls., followed by George F. Getty with 11,622 bbls. daily, Shell Oil Co. with 8,935 bbls. and Superior Oil Co. with 6,404 bbls. per day. The Wilshire Oil Co., with a total potential daily production of 21,262 bbls. does not rate an allowable production for the current period as its excess production between November 30 and December 14 exceeded its allowable for the present period.

Daily production at Santa Fe Springs showed a substantial increase during the past week due to the completion of several large flowing wells and a check indicates approximately ten more scheduled for completion during the next week. The big wells finished this week include the Union's No. 38 Bell doing 9,000 bbls. per day and the same company's No. 9 Howard flowing 6,500 bbls. daily, George F. Getty's No. 38 Mitchell and No. 39 Nordstrum doing 2,500 bbls. and 6,000 bbls. per day respectively, and the General Petroleum's No. 179-G Santa Fe doing 6,250 bbls. and the same company's No. 191-F Santa Fe flowing 1,280 bbls. per day. In addition to these wells, which were listed for completion last Monday, the Macmillan Petroleum Co. finished No. 2 Ratliff, a new well flowing 1,640 bbls. of 32.3 gravity oil daily from the lower Clarke at 8,000 feet. The Santa Fe Oil Co.'s No. 1 Springs was somewhat of a disappointment upon completion at 8,020 feet as this new well only showed an initial of 655 bbls. daily. The Texas Company, with a number of potential producers scheduled for early completion, finished well No. 15 on Mattern lease No. 3 flowing 1,660 bbls. daily from 7,975 feet.

Long Beach

The Apex Petroleum Co., under the direction of Vern Dumas, finished an exceptionally good well in the deep Miocene at Long Beach during the latter part of the past week and this new well is expected to hold up in good shape. The Apex Petroleum's new producer is No. 16-A Whitney, located near Willow and Signal Hill Boulevards in an area proven up for substantial production. This new well, which came in under perfect control, is flowing 3,215 bbls. of clean 29.6 gravity oil and 4,500,000 feet of wet gas daily from 7,938 feet. A 4¾-inch combination string, carrying 1,053 feet of perforated, was cemented through perforations at 6,885 feet. The Macmillan Petroleum Co. also chalked up a nice completion in the Long Beach Field during the past week when No. 4 Beck, a former upper zone producer, was returned to production flowing 840 bbls. of 27.5 gravity oil daily. This well, which was bottomed at 7,528 feet, was finished with a 4¾-inch combination string carrying 1,203 feet of perforated and was cemented through perforations at 6,325 feet.

Karl S. Deeds successfully recompleted his No. 4 Signal at Long Beach during the past week and this rejuvenated well was returned to production flowing 475 bbls. of 26.4 gravity oil daily. This project, which was bottomed at 6,927 feet, was finished with a 4-inch liner carrying 779 feet of perforated. The Shell Oil Co., discoverer of the Long Beach Field, heads the production list with a current daily output of 24,250 bbls., followed by the Richfield with 10,000 bbls. daily, Dabney & Johnston with 7,500 bbls., The Texas Company with 7,000 bbls., Union Oil Co. with 2,450 bbls., and General Petroleum with 1,500 bbls. The Associated Oil Co. successfully recompleted No. 3 DeFrancis in the Dominguez Field of Los Angeles Basin during the past week and this well was returned to production flowing 1,210 bbls. of relatively clean 29.6 gravity oil daily after being plugged back from 5,111 feet to 4,500 feet.

Midway-Sunset

Two new wells were finished in the Midway-Sunset Field of Kern County during the past 7-day period and both of them registered satisfactory production. The Doyle Petroleum Co. started off the week by finishing No. 1 Sonstelie flowing 2,485 bbls. of clean pipe line oil daily from 3,450 feet. The Signal Oil & Gas Co. followed up this completion by bringing in No. 4 Wallace, a new well flowing 1,235 bbls. of clean 26.4 gravity oil daily from 2,688 feet. This project came in barefoot through the 8⅝-inch landed and cemented at 2,638 feet. In the Mount Poso Field of Kern County the Signal Oil & Gas Co. finished No. 15-C, a new well in Section 27-27-28, doing 150 bbls. daily from 1,635 feet. Two new wells were finished in the prolific Ventura Avenue Field during the past seven-day period. The Shell's No. 42 Taylor, finished during the early part of the week, showed an initial of 1,420 bbls. daily from 6,969 feet. No. 5 Hartman of the Bolsa Chica Oil Co. was good for 1,500 bbls. daily from 7,525 feet.

Elwood

The prolific Elwood Field of Santa Barbara County had a rated potential daily production of 56,110 bbls. on December 14, according to Umpire Grimms' latest report showing the status of operations in that district. In order to reduce the rated potential of 56,110 bbls. daily down to the stipulated maximum of 30,000 bbls. a day operators in this field will be obliged to effect a cut of 46.53 per cent from the established potential. This order went into effect at 7 a.m. December 14 and latest reports indicate that every operator in the field has just about complied with the umpire's instructions. In establishing the field's potential of 56,110 bbls. daily the umpire was obliged to include 11,130 bbls. per day of new production added during the period in question. This additional production reflected the completion of four new wells finished previous to December 14.

The potential of new wells was established by taking the average daily production of the last four days of the first five full days subsequent to completion. No. 9 Bell Luton of the Barnsdall and Rio Grande averaged 2,667 bbls. per day in the last four days of the first five-day period following completion. No. 10 Bell Luton averaged 2,736 bbls., while C. J. Mahoney's well No. 1 on tideland drilling permit No. 91 averaged 2,598 bbls. daily. The Elwood Exploration Co.'s well No. 1 on tideland driling permit No. 90 showed the largest average daily production and headed the potential list with 3,129 bbls. For the current bimonthly period extending from December 14 to December 31 the Barnsdall and Rio Grande are credited with an allowable daily production of 17,151 bbls. The Pacific Western Oil Co. will be allowed to produce 4,002 bbls. per day in conformity with the curtailment agreement followed by the Bankline with an allowable production of 1,482 bbls. daily, Caroline Spalding with 1,455 bbls. daily, Elwood Exploration with 871 bbls. daily and C. J. Mahoney with 665 bbls. per day.

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
Union, No. 1 Buel Canyon, Santa Barbara Co.	X- 7-31	2,650	br. sh. drilling
Standard, No. 1 Point Conception, Santa Barbara Co.	X- 5-34	3,150	br. sh. drilling
Ohio Oil Co., No. 1 Lompoc, Santa Barbara Co.	2- 6-34	mtl.	building rig
Standard, No. 1 Point Arguello, Santa Barbara Co.	35- 6-36	2,310	fishing
Gaviota Oil Co., No. 1 Lompoc, Santa Barbara Co.	9- 7-35	2,677	abandoned
California Oil Prop. No. 1 San Marcos, Santa Barbara Co.	3- 4-28	3,804	seepe-drilling
Carey, A., No. 1 Goleta, Santa Barbara Co.	1- 4-28	2,100	rd. sh. drilling
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas well-idle
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	2,891	redrilling
General Pet. No. 1 Goleta, Tideland, Santa Barbara	21- 4-28	mtl.	building rig
General Pet., No. 2 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
General Pet., No. 3 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
General Pet., No. 4 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
General Pet., No. 5 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
Standard, No. 2 Goleta, Santa Barbara Co.	X- 4-29	1,650	sd. sh. drilling
Tannehill, L. B., No. 1 Goleta, Santa Barbara Co.	24- 4-29	4,570	cemented
Standard, No. 1 County Farm, Santa Barbara Co.	11- 4-28	1,925	sd. sh. drilling
General Pet., No. 2 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building rig
Oakburn Oil Co., No. 1 Capitan, Santa Barbara Co.	4- 4-30	150	sd. drilling
Oakburn Oil Co., No. 2 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building pier
Oakburn Oil Co., No. 3 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building pier
Oakburn Oil Co., No. 4 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building pier
Shell Oil Co., No. 1 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building rig
Fields Gasoline Co., No. 1 Orcutt, Santa Barbara Co.	36-10-34	5,025	testing
Keystone Oil Co., No. 1 Santa Maria, Santa Barbara Co.	33-10-34	4,375	gr. sd. drilling
Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	4,000	br. sh. drilling
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	1,960	sd. sh. drilling
Gilmore Oil Co., No. 1 Gibraltar, Santa Barbara Co.	1- 5-28	Rig	suspended
Shell, No. 1 Summerland, Santa Barbara Co.	18- 4-25	1,170	reaming
Standard, No. 1 Casitas, Santa Barbara Co.	28- 4-25	mtl.	build ng rig
Continental, No. 1 Carpenteria, Santa Barbara Co.	33- 4-25	5,130	gas well-idle
Continental, Tideland permit No. 122, Santa Barbara Co.	33- 4-25	66	rd. sh. drilling
Continental, Tideland permit No. 123, Santa Barbara Co.	33- 4-25	50	sd. sh. drilling
Continental, Tideland permit No. 124, Santa Barbara Co.	33- 4-25	75	rd. sh. drilling
Continental, Tideland permit No. 125, Santa Barbara Co.	33- 4-25	49	sd. sh. drilling
Continental, Tideland permit No. 126, Santa Barbara Co.	33- 4-25	50	sd. sh. drilling
Continental, Tideland permit No. 127, Santa Barbara Co.	33- 4-25	49	sd. sh. drilling
Continental, Tideland permit No. 128, Santa Barbara Co.	33- 4-25	65	sd. sh. drilling
Continental, Tideland permit No. 129, Santa Barbara Co.	33- 4-25	47	sd. sh. drilling
Continental, Tideland permit No. 131, Santa Barbara Co.	33- 4-25	mtl.	drive piles
Getty, Geo. F., No. 1 Carpenteria, Santa Barbara Co.	32- 4-25	68	cemented
Getty, Geo. F., No. 2 Carpenteria, Santa Barbara Co.	32- 4-25	25	sd drilling
Standard, No. 5-9 Saticoy, Ventura Co.	10- 2-22	8,410	cleaning out
Bolsa Chica, No. 1-A Temescal, Ventura Co.	4- 4-18	1,375	br. sh. drilling
As ociated, No. 1 Rincon, Ventura Co.	19- 4-24	300	sd. sh. drilling
Miley, E. J., No. 2 Casitas, Ventura Co.	7- 3-23	1,870	suspended
Frank Oil Co., No. 1 Fillmore, Ventura Co.	35- 4-20	2,168	suspended
Continental, No. 3 Sulphur Mountain, Ventura Co.	21- 4-22	5,730	fishing
Lockwood Oil Co., Well No. 1 Ventura Co.	28- 8-21	682	suspended
Milham Expltn., No. 9 Buttonwillow, Kern Co.	8-28-23	4,980	set pipe
Elmer Oil Co., No. 1 Bena, Kern Co.	15-30-30	3,800	suspended
Elmer Oil Co., No. 1-A Rosedale, Kern Co.	33-29-26	5,262	hd. sd. drilling
General Pet., No. 1 Rosedale, Kern Co.	23-29-26	5,260	hd. sd. drilling
The Texas Company, No. 1 Edison, Kern Co.	23-29-29	4,150	br. sh. drilling
Symark Oil Co., No. 1 Edison, Kern Co.	24-29-29	2,130	suspended
McVey, Max, No. 1 Jasmine, Kern Co.	23-25-27	Rig	rigging up
Union, No. 2 San Emidio, Kern Co.	5-10-21	3,690	redrilling
Mallery Willard, No. 1 San Emidio, Kern Co.	9-10-23	730	hd. sd. drilling
Currency Pet. Co., No. 1 Jacalitos, Fresno Co.	28-21-14	2,810	hd. sd. drilling
Knudsen, John, No. 1 Jacalitos, Fresno Co.	14-21-14	1,350	hd. sd. drilling
Rio Grande Oil Co., No. 1 Kerman, Fresno Co.	14-13-17	4,371	sd. sh. drilling
Petroleum Securities, No. 2 Huron, Fresno Co.	28-20-16	7,040	sd. sh. drilling
Western Gulf, No. 1 Penoche Valley, Fresno Co.	26-15-12	mtl.	building rig
Union, No. 1 Huasna, San Luis Obispo Co.	34-32-15	4,158	suspended
Union, No. 1 North Huasna, San Luis Obispo Co.	12-32-14	5,060	br. sh. drilling
Midwest Refining Co., No. 1 Huasna, San Luis Obispo Co.	34-31-15	2,212	redrilling
Panorama Oil Co., Well No. 1 San Luis Obispo Co.	7-31-21	4,019	cleaning out
Paso Robles Synd., No. 1 Creston, San Luis Obispo	27-27-11	3,742	suspended
Latin American, No. 1 Shandon, San Luis Obispo Co.	31-27-15	4,010	fishing
Shell, No. 1 Dudley, Monterey Co.	15-22- 9	5,175	suspended
Chessher, H. B., No. 1 Dudley, Monterey Co.	8-22- 9	245	suspended
Union, No. 1 King City, Monterey Co.	8-22- 8	2,625	br. sh. drilling
Standard, No. 1 King City, Monterey Co.	23-22- 7	3,075	hd. sd. drilling
Pacific Inland Oil Co., No. 1 Parkfield, Monterey Co.	19-23-15	50	sd. drilling
Penn Western, No. 1 Tulare Lake, King Co.	24-21-18	1,338	suspended
Dudley Ridge Synd., No. 1 Tulare, Kings Co.	12-23-19	1,305	gas, shut in
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,882	cemented
Porter, H. B., No. 1 Devils Den, Kings Co.	9-24-17	2,420	redrilling
Oceanside Oil Co., No. 1 Kreyenhagen, Kings Co.	32-22-16	300	sd. drilling
Getty, Geo. F., No. 1 Dutton, Madera Co.	18-13-16	4,101	sd. sh. drilling
Twin State Oil Co., No. 1 Soldani, Mendocino Co.	14-12- 7	1,680	gr. sd. drilling
Barnhart Trust, No. 1 Oakdale, San Joaquin Co.	3- 1-10	2,550	sd. sh. drilling
Inland Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,030	hd. sd. drilling
White, Roy, No. 1 Pixley, Tulare Co.	8-23-26	2,277	suspended
Terminal Oil Co., No. 1 Tulare, Tulare Co.	29-20-25	4,198	suspended
Terra Bella Oil Co., No. 1 Porterville, Tulare Co.	35-22-27	375	sd. drilling

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
Simmel, L. G., No. 1 Inglewood, Los Angeles Co.	21- 2-14	mtl.	building rig
Ohio Oil Co., No. 1 Del Rey, Los Angeles Co.	21- 2-15	6,199	new oil field
Raleigh Oil Co., No. 1 Malibu, Los Angeles Co.	1- 2-19	2,540	sd. sh. drilling
Clearwater Oil Co., No. 1 Bellflower, Los Angeles Co.	21- 3-12	3,000	sd. sh. drilling
Continental, No. 1 Alamitos, Los Angeles Co.	34- 4-12	5,550	hd. sd. drilling
Burlingham Pet., No. 1 Compton, Los Angeles Co.	17- 3-13	2,240	hd. sd. drilling
Big Boy Drlg. Co., No. 1 Compton, Los Angeles Co.	22- 3-15	....	material
Consolidated Exp. Co., No. 1 Compton, Los Angeles Co.	21- 3-13	4,930	sd. sh. drilling
Hanners, George, No. 1 Watts, Los Angeles Co.	3- 3-13	3,655	suspended
Diller, W., No. 1 Watts, Los Angeles Co.	8- 3-17	1,000	sd. sh. drilling
Cal. Well Drlg. Co., No. 1 Compton, Los Angeles Co.	11- 4-13	8,500	recemented
Archer Oil Co., No. 1 Watson, Los Angeles Co.	17- 4-13	5,050	sd. sh. drilling
Harbor Oil Co., No. 1 Watson, Los Angeles Co.	17- 4-13	....	material
Russell Oil Co., No. 2 Joughin, Los Angeles Co.	22- 3-17	2,418	suspended
Pomona Oil Co., Well No. 1, Los Angeles Co.	32- 1- 8	1,220	cleaning out
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,820	suspended
Rucker, R. C., No. 1 Puente, Los Angeles Co.	27- 2-10	3,200	sd. sh. drilling
The State Co., No. 1 Puente, Los Angeles Co.	5- 2-10	3,100	sd. sh. drilling
Keck & Hall, No. 1 Puente, Los Angeles Co.	32- 2- 8	691	testing
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	1,593	hd. sd. drilling
Union Oil Co., No. 1 Richfield, Los Angeles Co.	13- 3- 9	2,106	br. sh. drilling
Coastline, No. 1 Devils Canyon, Los Angeles Co.	21- 5-17	2,150	gr. sd. drilling
Olympic Corp., No. 1 Calabasis, Los Angeles Co.	18- 1-17	Rig	rigging up
Martin, J. W., No. 1 Newhall, Los Angeles Co.	22- 1-17	1,582	gr. sd. drilling
Consolidated Oil Co., No. 1 Newhall, Los Angeles Co.	22- 3-16	628	hd. sd. drilling
National Sec., No. 1 Newhall, Los Angeles Co.	1- 3-16	Rig	rigging up
Anderson, P. B., No. 1 Hasley Canyon, Los Angeles Co.	1- 3-16	841	sd. sh. drilling
Shell, No. 1 Bolsa, Orange Co.	18- 5-11	3,699	hd. sd. drilling
Shell, No. 1 Coyote, Orange Co.	28- 3-10	6,050	redrilling
Standard, No. 1 Coyote, Bastanchury, Orange Co.	21- 3-10	3,000	sd. sh. drilling
Union, No. 1 Coyote Sansinina, Orange Co.	30- 2-10	1,378	oil sand
Beard, G. F., No. 1 Brea Canyon, Orange Co.	30- 2- 9	1,199	redrilling
Western Gulf, No. 1 Brea Canyon, Orange Co.	28- 2- 9	311	sd. drilling
[illegible] No. 1 Newport, Orange Co.	31- 6-10	3,950	set plug
Oil Well Eng. Co., No. 1 Newport, Orange Co.	21- 6-10	2,795	suspended
Hall Pet. Co., No. 1-A Murrietta, Riverside Co.	23- 7- 3	701	cemented
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	3,403	suspended
Imperial Valley Oil Co., Well No. 1, Imperial Co.	32-11-10	2,980	suspended
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	3,005	sd. sh. drilling
McGregor Synd., No. 1 Del Mar, San Diego Co.	17-14- 3	1,120	sd. sh. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	X-13- 4	1,150	sd. sh. drilling
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,525	hd. sd. drilling
Duncan, N. L., No. 1 Mojave, San Bernardino Co.	8- 4- 6	Rig	rigging up

SPAIN TO TRY DISTILLATION

In the Ninth Congress of Industrial Chemistry, recently held in Barcelona, Spain, D. Cesar Serrano, president of the permanent committee on tests of materials, discussed the Spanish needs for petroleum. He stated that on the basis of probable consumption and visible supplies, the world's supply of petroleum would be exhausted by the year 1990. He said that the search for petroleum in Spain had indicated that deposits do not exist, nor did he see a solution for the problem in the use of substitutes. His conclusion was that the extensive deposits of lignites possessed by Spain must be distilled. By so doing, in his opinion, a large national industry can be developed which can supply the needs of the country and also provide for exportation to the Latin American Republics.

TO HANDLE TANK CAR LEASES

The Shippers Car Line Corp., 30 Church Street, New York, has opened a western office in the Wright Building, Tulsa, to facilitate co-operation with Mid-Continent customers in negotiating and handling tank car leases.

Patent Flattened Strand

"HERCULES" RED-STRAND

REG. U.S. PAT. OFF.

Rotary Drilling Lines

Results are what count, and Patent Flattened Strand "HERCULES" (Red-Strand) Rotary Lines have actually proved their ability to give extra value.

There are many practical *reasons why these lines are able to "out work" all others, but the real proof is in the field, and we would like to have you give them a chance to show you what they can do.

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Revival of Work in Old Lima Field

Follows Gas Development in Eastern Hancock and Hardin Counties and Extends Into Western Wyandot and Seneca Counties

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Dec. 23.—There will be a revival of operations in the eastern part of the old Lima Field, owing to the gas showings found in the eastern part of Hancock and Hardin Counties and the western part of Wyandot County, as well as in Seneca County. In the new Wharton-Mount Blanchard gas field, situated in Richland Township, Wyandot County and Delaware Township, Hancock County, Ohio, and between the townships mentioned, the Ohio Fuel Gas Co. has recently completed its new gas line to the field and wells and is now running gas into its northwest Ohio system, supplying Toledo and other northwestern Ohio cities.

Ryan and others are drilling a test on the William Bristoll 116 acres, Section 7, Delaware Township, Hancock County, while Harmon, Watts & Talbot have moved a drilling outfit on the Mark N. Bennett 56 acres, Section 7, same township. The Wharton Oil & Gas Co. is drilling No. 1 Margaret Adams 39 acres, Section 18, same township. There are now 10 producing gas wells in this new field, 5 owned by Harmon, Watts & Talbot, and 5 owned by the Wharton Oil & Gas Co. These wells are well scattered, proving the existence of a very large structure, the general trend of which at this time seems to be in a northwest and southeast direction. Wells with a volume as high as 750,000 feet have been secured in this new field with an average rock pressure of 470 pounds and the production is from the long life Trenton rock at 1,300 feet. The new field is in strictly virgin territory, there being no other producing field nearby. Since the Ohio Fuel Gas Co. put a line into the Seneca County Field to Tiffin, the drill will be kept moving along in that county in an active way. Several other companies are busy, some looking for oil and others for gas, there being a ready market for both products. A new entry in the Tiffin Field of Seneca County is the Recovery Oil & Gas Co., of Youngstown, Ohio. This company closed a deal for 21 leases originally taken in Liberty Township, Seneca County, by Noble L. Wood of Marion, Ohio, and came into grants on 1,675 acres of land under the transaction. In this block of acreage are the following farms: Samuel Hull, 74 acres; Wilbur Hull, 50 acres; Harold W. Klopp, 60 acres; Maggie A. Littler, 120 acres; Alijah Voorhies, 45 acres; Orpha Littler, 75 acres; William Day, 160 acres; Charles L. Dicken, 80 acres; Samuel Hull, 40 acres; Kate Fry, 120 acres; E. H. Chapman, 65 acres; J. C. Weaver, 106 acres; Emery M. Day, 70 acres; Alfred Hartenstine, 60 acres; Earl Chapman, 80 acres; Eva Bollinger, 80 acres; Ray Lutz, 160 acres; Samuel Hull, 20 acres and Emma Andrews, 80 acres.

William H. Hoyt and others, Akron, Ohio, leased nine farms in Liberty Township, Seneca County, the Amanda Michaels, John Hull, Lily Pfeiffer, Jacob Schubert and John P. Schock farms.

Seneca Wildcat Dry

The wildcat reported drilled by the Mystic Oil Co., 600 feet from the south line and 800 feet from the east line of the Joseph Fish, on the oil map as the G. S. Kanabel farm, Section 25, Reed Township, in Seneca County, according to reports, has been drilled in and dry. This test topped the Trenton Rock at 2,305 feet and went down 280 feet in the formation to a total depth of 2,585 feet. There was a slight showing of oil at a depth of 2,353 feet, but the hole caved badly and was given up.

A wildcat drilled by the Beaver Creek Oil Co., 200 feet from the south line, 600 feet from the east line of the Elfa Pugh farm, SE Section 1, Richland Township, Henry County, proved a dry hole. Top of Trenton found at 1,628 feet and dry at 141 feet in the sand at a total depth of 1,769 feet. This was formerly reported in Richfield Township, Lucas County.

In Sandusky County, Washington Township, the Lindy Oil Co.'s second test in the northwest corner of the Otto Fought farm, NE Section 11, pumped 30 bbls. the first 24 hours. Trenton was found at 1,285 feet and drilled 50 feet in to a total depth of 1,335 feet. In Ballville Township, same county, J. H. Murphy & Son's test in the southeast corner of the Isobal Sibrel farm, SE Section 31, proved dry. Top of Trenton was 1,386 feet and it was drilled 149 feet into the Trenton to a total depth of 1,535 feet.

In Perry Township, Wood County, the Muncie Valley Oil & Gas Co.'s test, 1,200 feet from the north and west lines of the Mose Flethner, SW Section 24, was a duster after going 267 feet into the Trenton lime at a total depth of 1,463 feet, the top of the Trenton being found at 1,196 feet.

CENTRAL OHIO

Thirty-five completions were reported from the Central Ohio fields for the past week, of which 11 were producers with an initial of 279 bbls., 8 dry holes and 16 gas wells. During the week 16 locations were staked and 18 wells started spudding, making a new total of 34 in work.

Ashland County failed to show a completion, which does not often occur as it is one of the staple areas of the field. The Ohio Fuel Gas Co. made a location for No. 1-4,974 on the Al Otton farm, Section 23, Orange Township. The Kemrow Co. is drilling No. 4 George W. Garst farm, Section 16, Mohican Township, also No. 1 Wayne Wile, Section 2, Montgomery Township.

Medina County had one completion by the Oko Oil & Gas Co. in No. 33 on the Sanford-Watson farm, Lot 3, Section 10, Chatham Township, and in the old Chatham Field, which produced 2 bbls. This is shallow territory. East Ohio Gas Co. is drilling No. 12 J. and A. Jalensics, Lot 2, same township.

Lorain County comes forward with a fair gas well drilled by Dempsey & McGrath, and is a test on the Mathias Myers, Lot 31, Ridgeville Township, at from 2,382 to 2,405 feet, which is the Clinton lime formation. Ohio Fuel Gas Co. is drilling No. 1-4,943 F. W. Bruce farm, Section 14, Carlisle Township.

In Wayne County, Wooster Field, the Ohio Fuel Gas Co. has an average gas producer in No. 1-4,886 on the William Gessner farm, Section 1, Congress Township, and made a location on the Guy C. Boldman, Section 18, same township. Same company is testing out its old No. 1-1,370 on the A. M. Boreman farm, Section 6, Wayne Township, in hopes of getting a better volume. Harmon and George have a light gas well on the C. Fetzer farm, Section 23, Chester Township, the gas being found in the Berea sand from 654 to 658 feet. Faulkner and others are drilling a second test on the Riley Henry, same section.

Holmes County reported one dry hole drilled by I. E. O'Hail, in No. 4 on the P. M. Young farm, Section 16, Knox Township, at a depth of 3,248 feet. East Ohio Gas Co. is drilling a second test on the Alonzo Bucy farm, Section 15, Richland Township.

Knox County

Knox County has slowed down to some extent and had only one completion reported, being the Ohio Fuel Gas Co.'s No. 2-4,850 on the J. J. Hyatt, Sections 3-6, and the well shows a fair gas volume.

Coshocton County is another spot that was active during the summer season that shows a decline in work. Bert Uhl drilled No. 5 on his own farm, Sections 1-2, Clark Township, which had an initial production under pump of 12 bbls. from the Berea sand from 856 to 869 feet. Spindler and others are drilling No. 5 J. Wolford farm, Section 24, Pike Township, same county.

Summitt County is holding its own in development work. F. A. Brendall and others found a duster on the Aaron A. Gaston farm, Section 13, Franklin Township, after passing through two formations that were dry. The first was at 3,909-15 feet and the second from 3,925-64 feet, and then found another dry spot from 3,964 to 4,013 feet, the total depth of the duster. Same firm drilled a gas well on the Frank Selzer farm, Section 7, Greene Township, same county. Stray sand was found from 3,978-81 feet and the best gas showing found from 3,981 to 4,015 feet. Same firm is drilling on the Shook-Waggoner farm, Section 19, Greene Township. G. W. Crouse is drilling Nos. 5 and 6 on his own farm, Section 18, same township.

In Licking County, Fallsburg Township, the Emerald Petroleum Co.'s No. 2 on the Ira M. Cochran farm, Section 10, is credited with 10 bbls. from the Berea sand from 752 to 762 feet. The Preston Oil Co.'s No. 2 on the Thomas Moran farm, Section 10, pumped 6 bbls. from the same formation at 684-94 feet. The Whitehill Oil & Gas Co. has a light gas well in No. 4 on the Ira T. Rine, Section 23, from 666-75 feet. Vaughn & Southern are drilling No. 8 on the Dora Dustheimer farm, Section 6, Franklin Township, same county. In Hanover Township, the Hope Construction & Refining Co.'s second test on the Mary Fleming farm, Section 13, is credited with an initial of 49 bbls. from the Clinton formation from 2,780 to 2,820 feet. Same company is drilling No. 5 on the Charles O. Bannon farm, Section 16.

Muskingum County

In Muskingum County, the test drilled by the Wehrle Co., on the Mel R. and Etta Emler farm, Section 17, Highland Township, is at last reported as a failure after a long period of drilling. This well was shut down for some time at 4,462 feet. The Clinton was reported found from 4,455-80 feet and drilled to a total depth of 4,500 feet. Mid-East Oil Co.'s No. 2 Porter farm, in Hopewell Township, is reported dry. The Ohio Fuel Gas Co. made a location for No. 1-4,966 on the F. L. Varner, Section 5, same township, and the Heisey Gas Co. made a location for a second test on the James M. Sidle, Section 5, same township. Athey Drilling Co. is drilling No. 1 W. H. Athey farm, and made a location for No. 3 on the Edward D. Walker farm, both in Falls Township. Ohio Fuel Gas Co. is drilling No. 1-4,937 J. C. Moore farm, same township. The Atha Co. is drilling on the Noah F. Dean in the fourth quarter of Washington Township, same county. In Jackson Township, the Pure Oil Co.'s No. 1 on the William McNaught farm, is reported an average gas well, and the same company is drilling No. 4 on the Lloyd McKee farm, Section 5. In Clay Township, William Kline and others' second test on the Ramsbottom Pottery land, Section 3, is rated good for 105 bbls. initial, and Abe Snyder and others' No. 3 on the Eliza O. Beem, same section, rated at 67 bbls. initial from 3,525-3,631 feet. Ohio Fuel Gas Co.'s No. 1-4,889 S. R. Wigton farm, Section 10, same township, had light showing in the Clinton from 3,605-50 feet, total depth 3,665 feet. Same company reports a dry hole in No. 1-4,841 on the O. R. Baum, Section 2, Perry Township, same county, at a total depth of 4,347 feet or 22 feet in the Medina formation. The Atha Oil Co. has a light gas well in a second test on the J. H. Moore, Section 23, Union Township, in the Injun sand from 830-33 feet. Perry Sturm and others have a duster on the George N. Wilson farm, Lot 321, Newton Township, Muskingum County.

Athens County

In Athens County, Ames Township, the Ohio Fuel Gas Co.'s No. 4-4,858 on the Albert Linscott farm, Section 3 in the lower Berea sand from 1,501-18 feet, total depth 1,526 feet. Same company also has a fair gas well in No. 1-4,925 E. H. Bennett farm, Section 2, in the same formation from 1,420-44 feet, total depth 1,450 feet. Same company made a location for No. 2-4,968 Theodore Fleming, Jr., farm, Section 5, also for No. 6-4,969 on the L. B. Glazier farm, Section 8, same township. Same company made three new locations in Berne Township, in No. 1-4,970 H. H. Henry, Sections 33 and 34; No. 2-4,971 Guy M. Kasler farm, Section 33, and No. 4-4,972, same farm. Same company's No. 3-4,875 on the Fred S. Moore farm, Sections 6 and 12, Lodi Township, is an average gas well at 1,640 feet. Gross & Freebault's test on the George Jacoby, Section 20, Athens Township, is reported good for 3 bbls. from the upper Berea sand from 1,117-28 feet.

In Meigs County, Hazlett and others' No. 4 on the Belle Spencer farm, Section 11, Sutton Township, pumped an initial of 10 bbls. from the first Cow Run sand from 608-28 feet. The Preston Oil Co. had a light gas well in No. 1-1,181 D. A. Dais, Section 26, Bedford Township, in the lower Berea sand from 1,414-1,525 feet.

Jackson County has three new locations in Lick Township, S. S. Stephenson's No. 1 Sophia L. Steele, Lot 114; Penn Oil & Gas Co.'s Nos. 2 and 3 on the Ida Warnecke, Sections 36 and 38; The same company is drilling No. 9 Leon Evans farm, Section 35.

Belmont County

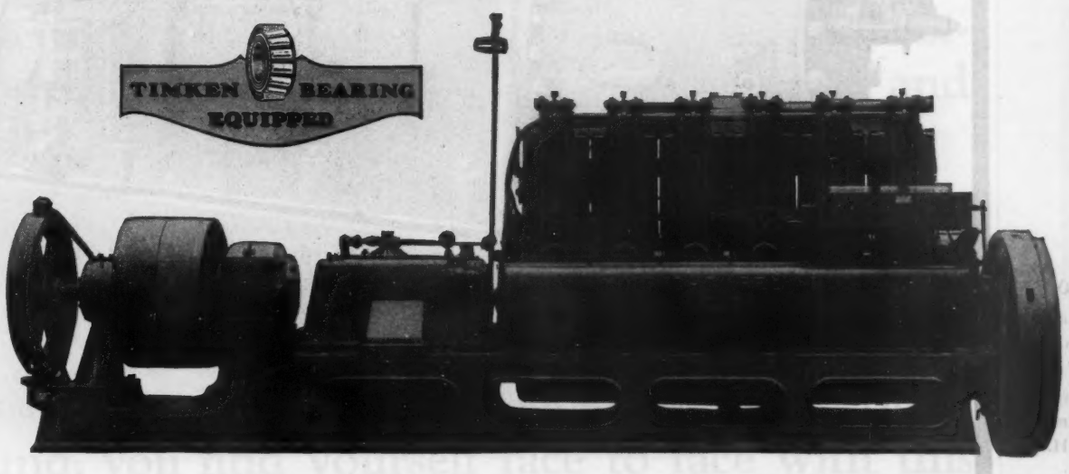
In Belmont County, Somerset Township, Patterson & Peters have a light gas well on the Allen Price farm, Section 26, in the lower Berea sand from 1,695-1,707 feet, total depth 1,728 feet. Frank Stranges has a dry hole in No. 4 on the C. C. and W. Shephard farm, Section 21, Union Township, at 1,156 feet. C. D. Crough and others are drilling on the Albert and Myra Negus farm, Section 8, Colearin Township.

In Pike County, Beaver Township, the A. & P. Oil & Gas Co.'s No. 2 Herman Shy farm, Section 31, is a very light gas well in the Ohio shale formation from 414-545 feet, total depth 550 feet, and another small gas well in No. 1 on the D. and D. Stewart farm, Section 30, in the same formation.

In Morgan County, the Kemrow Co. has a light gas well on the James L. and Ida Boyd farm, Lot 36, Marion Township, in the lower Berea sand from 1,558-73 feet, total depth 1,578 feet. Same company is drilling No. 11 on the Edmond Parker farm, Lot 4. Ohio Fuel Gas Co. has a fair gas well in No. 1-4,-

(Continued on Page 80)

The "Wright Reliable" Lives Up To Its Name



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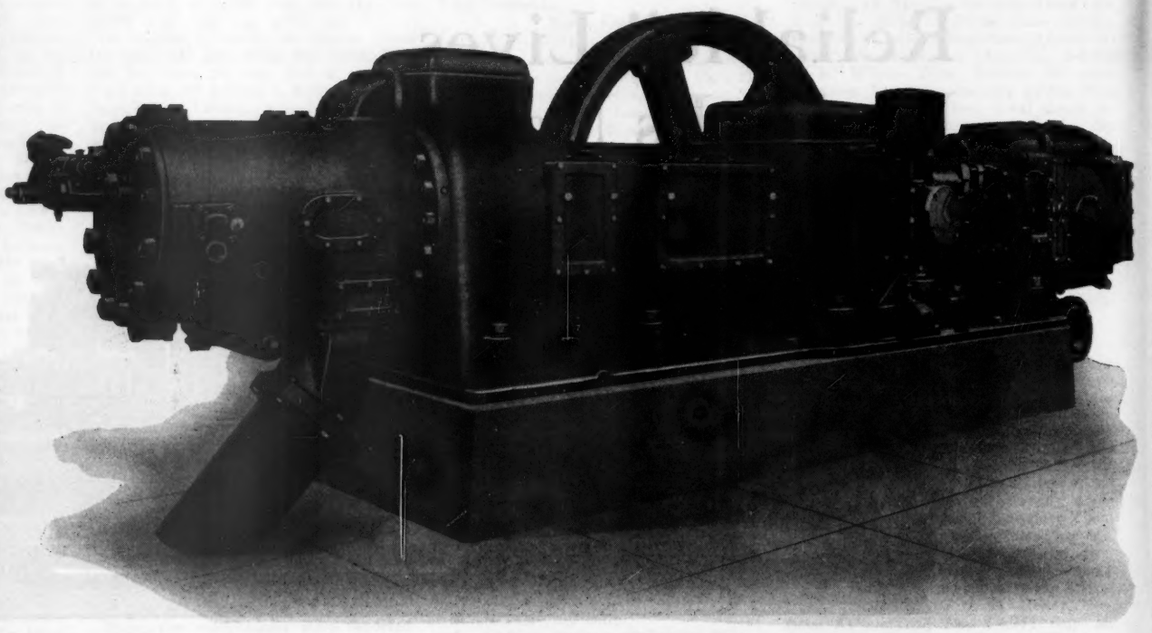

TYPE-10
Cooper-Bessemer gas engine or gas engine driven compressor unit in single and twin cylinders 95 to 200 B. H. P.

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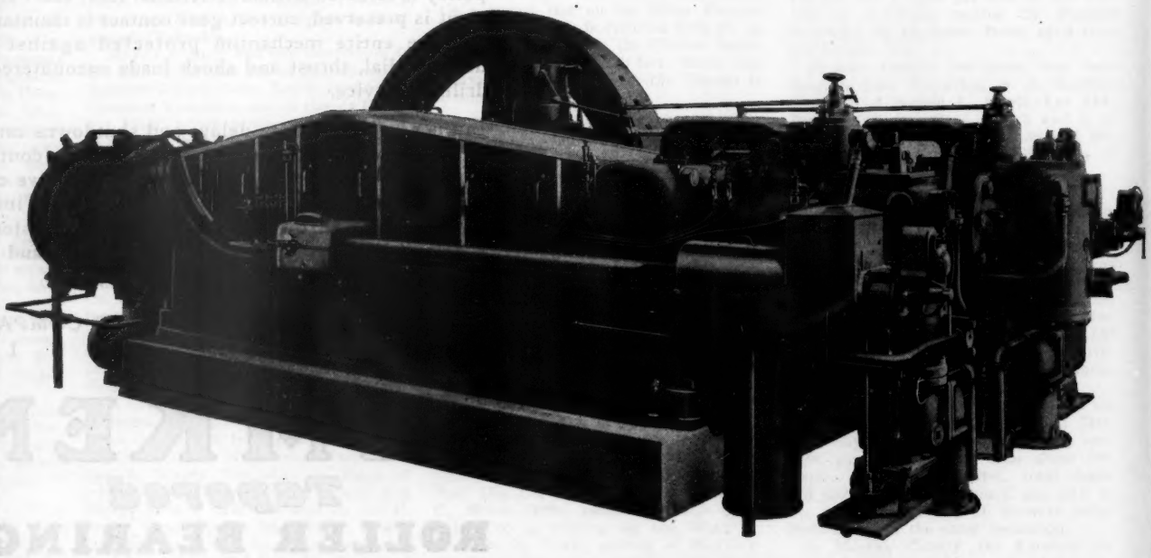

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Eighty Barrel Well Best In the East

Only a Few Better Than Average Producers Were Completed Even in the Southeast Ohio Deep Sand Territory

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Dec. 23.—There was not even in the deep sand territory a 100-bbl. well completed and only a few better than the average. In Section 7, Hanover Township, Licking County, the Edward H. Everett Co. completed and shot in the Clinton sand No. 3 on the Felix Claypool farm. It produced 80 bbls. the first 24 hours. In the southwest quarter of Lot 34, Washington Township, Tuscarawas County, the Gordon Oil Co. completed in the Niagara lime a test on the Thomas Shearer farm that produced 60 bbls. the first 24 hours. The two wells were the best completions during the entire week.

SOUTHEAST OHIO

In the N half, Section 13, Olive Township, Noble County, the Permian Oil & Gas Co. and others completed in the Berea grit a test on the Blake heirs farm. It is a gasser good for 500,000 feet. In the NE Section 12, Wheeling Township, Guernsey County, the Preston Oil Co. has drilled a test on the A. K. Robison farm into the Niagara lime that swabbed 25 bbls. after the well had been standing two days.

In Section 27, Jackson Township, Monroe County, the Oil Development Co. is due in the sand on the George Deist farm. In Bethel Township, Forrest Summers is drilling on the Hensel Jackson farm. In Malaga Township, the W. C. McBride Co., Inc. is drilling a second test on the D. L. Hagan farm. In Pike Township, Perry County, Perry Sturm and others have a rig up on the J. B. Sandas farm. In Clayton Township, the Wehrle Co. has started to drill on the L. E. Wright farm. In Reading Township, the Preston Oil Co. has a rig up on the S. H. Saffell farm. In Coal Township, the Chartiers Oil Co. is drilling on the Hocking Valley Products Co.'s property. McClay Brothers and others have a rig up on the Karl Brown farm. Westbrook Brothers & Co. have a rig up on the Boyd and Vocum lots.

In the SW Section 3, Clay Township, Muskingum County, Bell and Scholl completed their test on the E. L. Smith farm to the Clinton at 3,524 feet and after shot it showed good for about 25 bbls. a day.

A. W. Patten and others completed their No. 11 on the G. E. Cotterman farm, Section 14, Franklin Township, Licking County. It was drilled to the Berea at 712 feet and after shot produced 14 bbls. the first 24 hours. In SE Section 18, on the S. E. Ackley farm, McKee Brothers completed their test to the Berea grit at 1,419 feet. It is about 600 feet from their No. 2 on the McKee Brother farm, Noble Township, Noble County, and after shot it is showing for about a 3-bbl. pumper.

Berlin & Brian and others completed a test on the L. Ruff farm, SE Section 21, Marion Township, Hocking County, to the Clinton at 2,475 feet and it is a duster.

On Lot 14, Section 12, Chatham Township, Medina County, the East Ohio Producing & Refining Co. completed No. 11 on the Steve and Anna Jelencis farm. It produced 25 bbls. the first 24 hours. In the Fisher Pool, Section 20, Athens County, Ross & Frebault have a light pumper in the Berea grit on the George Jacobs farm.

Licking County

In Fallsbury Township, Licking County, the Emerald Petroleum Co. has completed a second test on the Mrs. Arlie Cochran farm. It produced 12 bbls. the first 24 hours after shot in the Berea grit. In Section 11, same township, the Emerald Petroleum Co. and others have completed a second test on the Thomas Moran farm. It is a 10-bbl. pumper in the Berea grit.

In the NW of Section 10, Clay Township, Muskingum County, the Ohio Fuel Gas Co. completed a test on the J. W. Wigton farm. It produced 22 bbls. the first 24 hours after shot in the Clinton sand. In the SW of Section 10, Laurel Township, Hocking County, William Spangler has completed a test on the J. W. Spangler farm. It is a light gasser in the Clinton sand.

Meigs County

In the NW of Section 11, Sutton Township, Meigs County, the Twenty-Five Association, Inc., has completed in the Cow Run sand No. 14 on the William Carbahan farm. It produced 10 bbls. the first 24 hours. It is a gasser good for 70,000 feet. In the same township the Southeastern Ohio Petroleum Co. has started to drill on the Harry Potts farm.

WEST VIRGINIA

In McClellan district, Doddridge County, Trainer Brothers completed a test on the Ervin Bates farm, showing for a 5-bbl. pumper. In Magnolia district, Wetzel County, the H. M. C. Oil & Gas Co. completed a duster on the Mary Jane Harker farm. In Cass Township, Monongalia County, the Carnegie Natural Gas Co. has a gasser in the Big Injun sand on the Rufus J. Lazzelle farm.

On Sugar Camp Run, Reedy district, Roane County, the Heck Oil Co. has drilled No. 6 on the A. D. Tallman farm into the top of the Berea grit and showing for a good producer. The location is 700 feet north of the same company's test on the W. H. Enoch heirs' farm.

On Little Island Run, Clay district, Wirt County, W. C. Patterson has a rig completed on the Vernon-Donoho tract. In Elk district, Kanawha County, the United Fuel Gas Co. has a gasser at No. 3,965 on the Numa Block Coal Co.'s property.

In Washington district, Boone County, the Owens Bottle & Machine Co. has a gasser on the J. T. Emarr farm. In Sherman district the same company has a gasser on the Peytonia Coal Co.'s property. In Washington district, the same company has a gasser at a second test on the J. K. and Oliver Ballard farm.

In McComas district, Cabell County, the West Virginia Gas Corp. completed a test on the Noah Baylous farm. It is a gasser in the Big Injun sand. In the same district the Cambridge Gas Co.'s test on the Hawkins Perry farm is a gasser in the same formation. In Grant district the Harshbarger Oil & Gas Co. has a gasser in the Big Injun sand on the John Conner farm.

Boone County

In Scott district, Boone County, the Cameron Oil & Gas Co. has a gasser in the Berea grit at No. 10 on the George P. Alderson farm. In the same district the Mountain State Fuel Co. has a gasser in the Big Injun sand on the Wade Stollings & Co.'s farm. In Washington district the Hope Natural Gas Co.'s No. 7,443 on the J. D. Allen farm is a gasser in the same formation.

In Curry district, Putnam County, J. V. Reishman has a gasser in the Berea grit at a second test on the William Grass farm. In the same district the Penn Natural Gas Co. has a gasser at a second test on the H. J. Miller farm. In Jefferson district, Lincoln County, Wolf & Rand have a gasser on the Isaac S. Rand farm.

In Cameron district, Marshall County, Fry & McCracken have completed a test on the J. C. Fry farm. It is dry and abandoned. In the same district Heinerman & Reid completed No. 3 on the H. W. Ernest farm. It is a gasser in the Big Injun sand. In Union district, Tyler County, Morgan and others have a duster on the Margaret Rockwell farm.

In Union district, Pleasants County, Gale & Samuels completed No. 15 on the Sarah D. Thistle farm. It is a 4-bbl. pumper in the Big Injun sand. In Walker district, Wood County, Alleman & Horner have a 2-bbl. pumper on the Thomas Rickard farm.

In Troy district, Gilmer County, A. L. Britton & Co.'s test on the William Burkhammer farm is dry in the Big Injun sand. In DeKalb district, McCall & Co. have a gasser in the Maxon sand at a second test on the M. H. Frymyer farm.

Roane County

In Geary district, Roane County, Richard Elkins & Co. have a gasser in the Big Injun sand on the G. F. Tawney farm. In the same district, the Ohio Fuel Gas Co.'s No. 4,037 is a gasser in the Big Injun sand. In Curtis district, same county, the Parsons Oil & Gas Co. has a 3-bbl. pumper in the Salt sand on the L. B. Bee farm.

In Washington district, Jackson County, Thomas A. Harris has a duster on the Mollie Ludwick farm. In Sherman district, Calhoun County, L. P. Bickel's test on the R. M. White farm is a gasser in the Big Injun sand. In Lee district, D. Smith & Co. have a gasser in the same formation on the John Slider farm.

In Murphy district, Ritchie County, the Hope Natural Gas Co.'s No. 6,851 on the W. B. Cunningham farm is dry in the Berea grit and abandoned. In Mannington district, Marion County, C. R. Morris has a dry hole on the Riley Arnett farm. It has been abandoned.

Calhoun County

In Center district, Calhoun County, Snodgrass & Co. are rigging up on the Lee B. Jeffries farm. In Sheridan district, the Rector Oil Co. has a rig up on the B. S. Raybuck farm. In Center district, Gilmer County, the Carnegie Natural Gas Co. has a rig up on the B. Stout farm and made a location on the E. Jamison farm. In DeKalb district, the White Pine Oil & Gas Co. is rigging up on the N. Hardman farm to drill deeper. In Washington district, Calhoun County, Godfrey L. Cabot has made a location on the Thomas F. Smith heirs farm. In Grant district, Ritchie County, David French and others have a rig up on the B. F. Gilmore farm. In Murphy district, Pope Brothers are fishing on the H. S. Wilson farm. In Burning Springs district, Wirt County, R. O. Wagner has a rig up on the Luther Kemp farm.

In Mannington district, Marion County, the Carnegie Natural Gas Co. is fishing for tools on the Wade-Glover farm. In Church district, Wetzel County, the same company is building a rig on the J. D. Bartrug farm. In Reedy district, Roane County, the Heck Oil Co. is building a rig on the J. E. and U. G. Watkins farm. In Ravenwood district, Jackson County, Edward Hess & Co. have part of the rig material at a location on the Arthur S. Geary farm. In Sherman district, Calhoun County, the Hope Natural Gas Co. is building a rig on the J. S. Huffman farm. In the same district, the same company has rigged up on the F. S. Barr farm. In Lee district, F. F. McIntosh has rigged up on the S. A. Hays farm. In the same district,

OPERATORS IN OWENSBORO FIELD AGREE ON CURTAILMENT PROGRAM

By Whit
Staff Correspondent, Kentucky-Tennessee

OWENSBORO, Ky., Dec. 23.—Operators in the Owensboro Field have organized the Western Kentucky Oil Operators Association and have agreed to halt all drilling operations until January 15, 1929, in an effort to curtail production. Charles Curry of the Wood Oil Co., Inc., is president of the new organization; Carl Wejdeman of the Cumberland Petroleum Co., vice president; Courtney Combs, head of the Owensboro Oil Exchange, secretary, and James C. Ellis of the Producers Pipe Line Co., treasurer.

Contract and offset drilling will be allowed under the terms of the agreement. Wells already started can be completed.

This curtailing of development work to a large extent is expected to give the pipe lines an opportunity to take care of the overproduction of the field, which has increased rapidly through the opening up of numerous new pools in the stray sands of northern Ohio County, such as the Bartlett, Morgan, Barnett's Creek Church Pool and the recently discovered Buford Pool, which has developed some large stray sand producers.

In the Friendship Church area of Ohio County, the wells, though not as large as those in the stray sand pools west and south of Taffy, keep the pipe line handling the crude at top speed.

The shutdown agreement was signed by the Ohio Oil Co., Wood Oil Co., Hupp & Duff, Cumberland Petroleum Co., Three C's Oil & Gas Co., Penn-Indiana Oil Co., Jetsan Oil Co., Smith, Randolph & Co., C. E. Daugherty, H. C. Schmith Co., H. C. Vickers, Swartout, Rhodes & Co., Caudill & Co., Charles T. Maple, John S. Lyle, Mecca Oil Co., D. J. White, Evans & Garrison, Rex-Pyramid Oil Co., James C. Ellis, Imperial Oil & Gas Development Co., Petroleum Exploration Co., Huff & Calderwood, McMahan & Combs and others.

Oil South of Fault

The outstanding late completion is a wildcat drilled by Sargent, Johnson & Jenkins on the Nation Brothers farm, 3 miles northeast of Livermore, and reported in Daviess County. This well is to the south of the Rough River fault, and while not large brought about a lively leasing campaign, and many leases changed hands at long prices. Formerly no one would venture to the south of the fault, as it was believed drilling there would be wasting time and money. The new well, reported good for 25 bbls., has changed the rush for leases on the south side of what was supposed to be the dividing line of the Ohio and McLean County Fields. This well is southwest of the Wiggington lease with large Stray sand producers which are in the Buford area of Ohio County and probably means a new pool. Were it not for the shutdown agreement, many strings of drilling tools would be rushed into the vicinity of the Nation Brothers farm. Even the lowlands of Rough River are bringing good lease prices to the land owners, as

(Continued on Page 80)

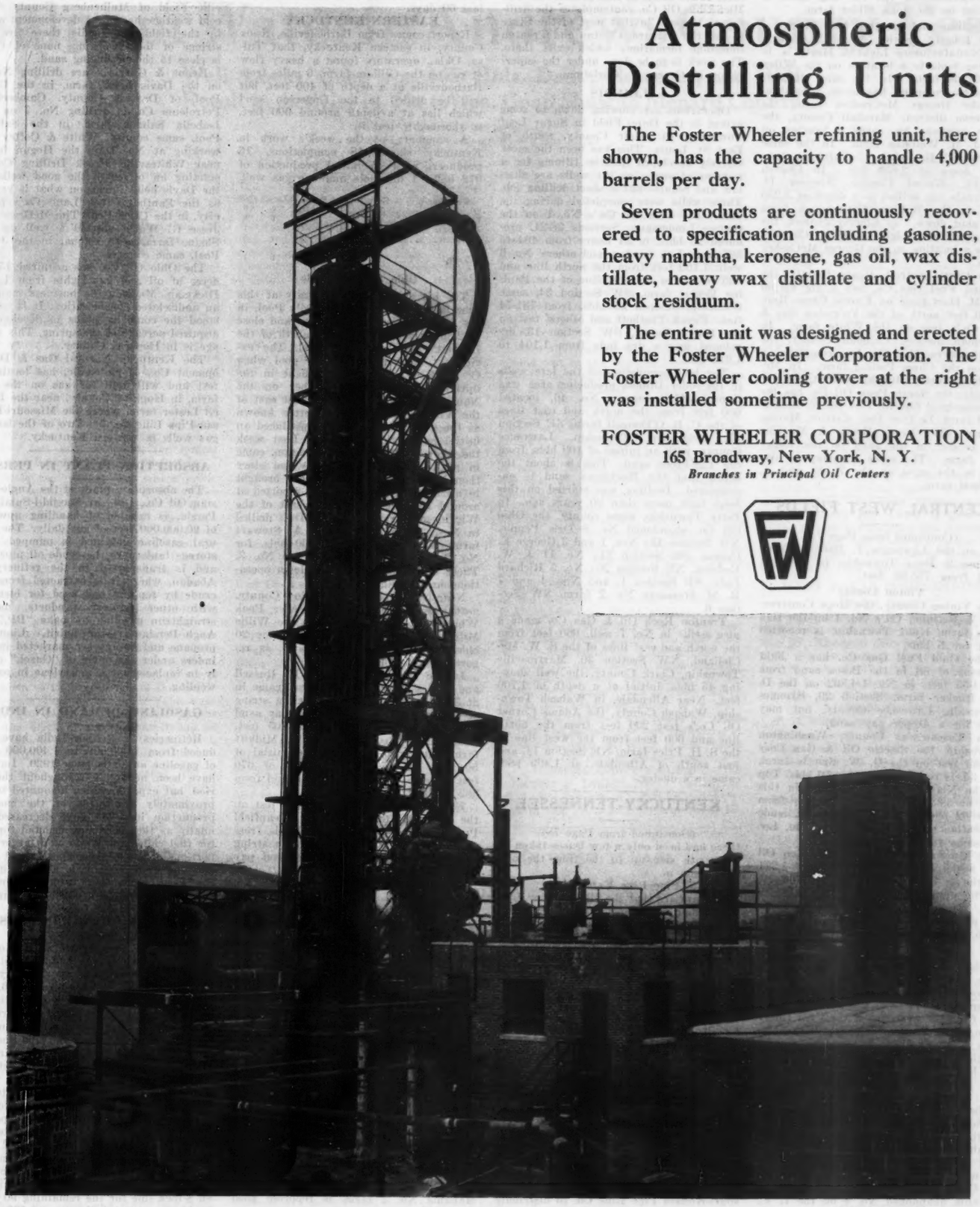
Atmospheric Distilling Units

The Foster Wheeler refining unit, here shown, has the capacity to handle 4,000 barrels per day.

Seven products are continuously recovered to specification including gasoline, heavy naphtha, kerosene, gas oil, wax distillate, heavy wax distillate and cylinder stock residuum.

The entire unit was designed and erected by the Foster Wheeler Corporation. The Foster Wheeler cooling tower at the right was installed sometime previously.

FOSTER WHEELER CORPORATION
165 Broadway, New York, N. Y.
Branches in Principal Oil Centers



FOSTER WHEELER

the Southeastern Oil Co. has made a location on the John Slider farm.

Drilling and Starting New Work

In Liberty district, Marshall County, the Manufacturers Light & Heat Co. is moving tools to a location on the Wiley A. Evans farm. In the same district, the same company has made a location on the George McCracken farm. In Cameron district, Marshall County, the same company has made a location on the J. M. Wellman farm. In the same district, C. B. and A. C. Patterson have shut down at 2,850 feet. In Church district, Wetzel County, Spencer H. Stockdale has drilled to a depth of 3,255 feet on the William Hixenbaugh farm and shut down. In Liberty district, the Manufacturers Light & Heat Co. has made a location on the George McCaskey farm.

In Curtis district, Roane County, the United Fuel Gas Co. has a rig up on the M. Hart farm on Frozen Camp Run, 3,000 feet north of the Virginian Gas & Oil Co.'s test on the White farm. In Sherman district, Calhoun County, the Southeastern Gas Co. has completed a rig on the Chess Polling farm. In McFarland Creek, Murphy district, Ritchie County, the South Penn Oil Co. has the rig completed for No. 1 on the E. Bickerstaff farm. In Paw Paw district, Marion County, the Owens Bottle & Machine Co. is due in the sand on the Edgar Fox farm. The same company is also due in the sand on the Z. E. and A. Michael farm.

CENTRAL WEST FIELDS

(Continued from Page 74)

900 on the Lawrence T. Parsons farm. Section 3, Penn Township, in the Salt sand from 755-68 feet.

Vinton County

In Vinton County, the Hope Construction & Refining Co.'s No. 1 on the Dan Bass farm, Knox Township, is reported good for 5 bbls.

The Ohio Fuel Gas Co. has a light showing of oil in the Berea sand from 1,244-55 feet, in No. 1-4,892 on the D. W. Rucker farm, Section 29, Symmes Township, Lawrence County, but may drill for a deeper pay sand.

In Tuscarawas County, Washington Township, the Smetts Oil & Gas Co.'s second test on the G. W. Smetts farm, Lot 35, is reported good for 10 bbls. Top of the Niagara lime was found in this well at 3,334 feet and the oil pay from 3,500-02 feet. Ohio Fuel Gas Co. made a location on the Anna Meek farm, Lot 31, same township.

In Guernsey County, the Preston Oil Co. has a nice gas well in No. 3-1,371 on the J. C. Alloway farm, Section 10, in the upper Berea sand from 1,181-89 feet, total depth 1,191 feet. Kemrow Co. made a location on the J. H. Fowler farm, same section.

INDIANA

The feature of Indiana development was the bringing in of an oil well far above the average by William Bell and others, 600 feet from the north line and 200 from the west line of the Fred Lindy farm, NW Section 31, Clay Township, Pike County, which had an initial production of 100 bbls. from 1,314-24 feet, the largest well found in the southwestern part of the State for some time. No. 2, same farm, is drilling. F. B. Hillis, trustee, who a short time ago found a remarkably good well in No. 2 on the W. H. Lindy farm, same section, is about due to bring in No. 3. This Bell well was the only one completed for the week. In Washington Township, Gibson County, the Murphy Oil Co. of Pennsylvania abandoned No. 4 on the L. C. Frederick farm, NE Section 6. The Shell Petroleum Corp. and the Indiana Oil & Gas Corp., according to advices, will do considerable test work in southwestern Indiana.

Jasper County, in the western part of the State, about 90 miles southwest of South Bend, is in for a good testing. This is in the Kankakee Valley territory, which many years ago produced a fine grade of lubricating oil at very shallow depths, varying from 50 to 200 feet, with three lower sands to find production. The Mich-Ohio Oil Co. contemplates the drilling of 10 tests in that part of the State to test the Niagara, Clinton and Trenton limestone formations which exist there. The work is to be done under the supervision of George C. Christman.

ILLINOIS

Operations are slowing down to some extent in the Dupo Field in Sugar Loaf Township, St. Clair County, south of East St. Louis. This has been the most actively developed field in Illinois for a number of years, as the wells are shallow and require but a short drilling job. Three wells were completed during the deek. The Ohio Oil Co.'s No. 1 on the George Lindemann, Sections 28-21, produced 25 bbls. in 24 hours from 494 to 525 feet. Lon Sanders and others' No. 3 well, 1,100 feet from the north line and 535 feet from the east line of the Pauline Eckert farm, SW Section 34, same township, pumped 35 bbls. from 731-74 feet. Frank Thethoff and others' test on the Harry Young, SW Section 13, developed into a dry hole from 1,104 to 1,214 feet.

The best completion of the late wells in the older Illinois producing area was Snowden-McSweeney's No. 46, located 600 feet from the north and east lines of the C. B. O'Donnell farm, SE Section 17, Bridgeport Township, Lawrence County, with an initial of 100 bbls. from the 1,284-foot sand. This is about the depth that the Buchanan sand is encountered. Drilling was started on this lease back more than 20 years ago. In Petty Township, same county, the Ohio Oil Co. abandoned No. 8 Oris Pepple, NW Section 13; Nos. 1 and 3 George E. Cessna, SE Section 11; No. 11 J. W. Rodrick, NE Section 26; No. 5 Richard Judy, SE Section 1, and Nos. 4 and 7 R. M. Harsacre No. 2 farm, SW Section 6.

Trenton Rock Oil & Gas Co. made a nice strike in No. 7 well, 660 feet from the north and east lines of the S. W. McClelland, NW Section 30, Martinsville Township, Clark County, the well showing 45 bbls. initial at a depth of 1,700 feet. Near Allendale, in Wabash Township, Wabash County, the Adams Corner Oil Co.'s test 200 feet from the north line and 600 feet from the west line of the S. H. Price farm, NE Section 14, and just south of Allendale, at 1,499 feet, came in a duster.

KENTUCKY-TENNESSEE

(Continued from Page 78)

there had been only a few leases taken on the south side up to the time the new well came in.

Pipe Line Extension

Reports are that the Illinois Pipe Line Co. is planning extension of its lines from the main line in Daviess County to the Niagara Field in Henderson and Webster Counties, and pipe the oil from that field to Owensboro, where it will join the main line running into Indiana, thence to Lawrenceville, Ill. The length of the line has not been announced. There are approximately 30 producing wells in the vicinity of Niagara about 10 miles southeast of Henderson, all being capped for the want of a market. Under the plan just announced, six pumps will be placed in and near Niagara, operating all of the producing wells in that vicinity. It is estimated that the present output of the field is close around 600 bbls. a day, with drillers bringing in new wells almost weekly. The best well in the field is said to be good for 100 bbls. a day.

Gas Franchises

Permits have been granted the Missouri-Kansas Pipe Line Co. to distribute natural gas in two Indiana industrial communities, Cannelton and Tell City, across the Ohio River from the Owensboro oil and gas fields. Service in these two towns will inaugurate activities for Missouri-Kansas in Indiana. The Indiana-Kentucky Natural Gas Corp. is a subsidiary in order to furnish gas to Indiana markets in its territory. These two latest franchises now give Missouri-Kansas six communities in that area for distribution of its products, franchises for five of them having been obtained in the last 60 days.

EASTERN KENTUCKY

Report comes from Barbourville, Knox County, in eastern Kentucky, that Tulsa, Okla., operators found a heavy flow of gas on the Gilliam farm, 6 miles from Barbourville at a depth of 400 feet, but will be drilled to the Epperson sand which lies at a depth around 900 feet, to thoroughly test it.

A summary of the week's work in Kentucky shows 18 completions, 16 producers with an initial production of 972 bbls., 1 dry hole and one gas well.

County—	Comp.	Oil	Prod.	Dry	Gas
Ohio	11	11	910	0	0
Daviess	4	3	55	1	0
Hancock	2	1	2	0	1
McLean	1	1	5	0	0
Total	18	16	972	1	1

Ohio County Wells

The big noise in Ohio County at this time is the new Buford or Jolly Pool, in the western part of the county and close to 2 miles west and a little north of the Barnett's Creek Church Pool. The excitement started in the new pool when C. M. Root and others brought in the initial well late in November on the Nancy Wiggington 96 acres, just east of the Vincent Steele farm, better known as the Chicken farm, which produced an initial better than 500 bbls. Last week the second well on the Wiggington, came in at a 500-bbl. initial rate and since then Nos. 3, 4 and 5 have been brought in all in the Stray sand and reported at around 150 bbls. each. Just east of the Wiggington farm, Hupp and Duff drilled in Nos. 2 and 3 on the J. A. Stewart farm, reported at around 100 bbls. for No. 2 and 200 bbls. initial for No. 3. These two leases have shut down operations until January 15.

Near Oklahoma, in Ohio County, northwest of the Ambrose-Weller Pool, White and Vickers' No. 3 on the Willie Mills farm, is reported as good for 20 bbls. initial. No. 4, same farm, is reported at 35 bbls. initial.

In the Deanfield Pool, S. H. Russell and others' No. 11 Greer farm, came in at 35 bbls. initial. In this well a string of 669 feet of casing was set, pay sand from 681-84 feet, total depth 705 feet. Same firm's No. 4, on the W. Midkiff farm, same pool, produced an initial of 50 bbls. In this well a string of 670 feet of casing was set and pay sand from 682-705 feet.

Fred Weir and others' second test on the Guy Muffett 84 acres, Deanfield Pool, produced an initial of 10 bbls. from a total of 685 feet. In this hole a string of 645 feet of casing was set and pay sand from 663-80 feet.

In the Howard Pool, J. E. Hare's No. 4, on the W. L. Howard 20 acres, is a 10-bbl. initial pumper. A string of 402 feet of casing was set, pay sand from 410-20 feet.

Daviess County Wells

In the Owensboro Field, Daviess County, Utica Pool, the Petroleum Exploration Co.'s test on the M. Clark farm, produced an initial of 25 bbls.

Creek Drilling Co.'s wildcat on the Ward farm, near the town of Delaware in the extreme western part of Daviess County, came in a duster at a total depth of 1,870 feet. This test is quite a distance west of this company's production in the St. Joseph area, where a few wells are producing oil, and has been connected to the Illinois Pipe Line Co.'s line. Same company's No. 2, on the Floyd Kirk lease, in the Utica Field, is a 5-bbl. pumper at 1,410 feet.

Near Calhoun in McLean County, the Ohio Oil Co.'s No. 2, on the G. B. McManama No. 2 farm, is reported good for 5 bbls.

East of Pellville, near Victoria, in Hancock County, the Missouri-Kansas Pipe Line Co., has a light gas well at a test on the Charles Vogles farm, and H. H. Vickers and others' No. 3, in the northeast corner of the Birch Parrott farm, 3 miles east of Pellville, produced but 2 bbls., under pump.

Cold Weather Hampers Work

Ellis and Young are down close around 1,000 feet in No. 3 on the Rice Brothers, or Preecher Woodson farm, in the Greenville Field of Mulhenberg County. The cold weather hampered development work in the field and while there are 10 strings of tools working, none of them is close to the producing sand.

Evans & Garrison are drilling No. 9 on the Davis heirs' farm, in the Utica Pool, of Daviess County. Cumberland Petroleum Co. is drilling No. 7 on the Isabella Salmon farm, in the Salmon Pool, same county. White & Coffey are working at No. 1 on the Hogan farm, near Whitesville. Creek Drilling Co. is starting an offset to the good wells on the Davis heirs' farm, on what is known as the Panther Creek Land Co.'s property, in the Utica Pool. Tim McGraw and Jesse G. Watts started a well on the Sloane farm, near Fuqua, in the Jones Pool, same county.

The Ohio Oil Co. has acquired 15,000 acres of oil and gas rights from L. K. Hickman, Madisonville business man, at an undisclosed consideration. It is understood the company plans to develop the acquired acreage in the spring. This acreage is in Hopkins County.

The Kentucky Natural Gas & Development Co., Hopkinsville, has located a test and will drill for gas on the Poe farm, in Hopkins County, near the Howell Lester farm, where the Missouri-Kansas Pipe Line Co. has two of the largest gas wells in western Kentucky.

ABSORPTION PLANT IN PERSIA

The absorption plant of the Anglo-Persian Oil Co., Ltd., at Masjid-i-Sulaiman, Persia, is capable of handling upwards of 20,000,000 feet of gas daily. The natural gasoline obtained is pumped from storage tanks into the crude oil pipe line and is transported to the refinery at Abadan, where it is extracted from the crude by topping and used for blending with other refinery products, mainly straightrun gasoline to make "BP," the Anglo-Persian motor spirit. Liquefied propane and butane are marketed in cylinders under the name of "Gasol," chiefly in replacement of acetylene in oxygas welding.

GASOLINE DEMAND IN INDIA

Refineries in British India have produced from 1,000,000 to 1,400,000 bbls. of gasoline annually since 1920. Imports have been negligible throughout the period, but exports, which amounted to approximately two-thirds of the gasoline production in 1920, have decreased annually as the increasing demand for motor fuel called for larger and larger proportions of the local production. At present, the local demand is about equal to the local production, which is in the neighborhood of 1,400,000 bbls. yearly.

INDUSTRY'S START IN PERSIA

Well No. 1, now known as B-1, of the Anglo-Persian Oil Co., Ltd., was started at Masjid-i-Sulaiman on January 23, 1908, and was completed on May 26, at a depth of 1,179 feet, with a production of about 230 bbls. daily. This well first indicated that oil in commercial quantities existed in Persia. The first pipe line was completed in June, 1911, and the first oil was pumped from fields to the refinery at Abadan in September of that year. Only four wells had been completed at that time, but these gave a production sufficient for the needs of that period. The first pipe line was a composite one, consisting of an 8-inch line for the 2 miles between the field's storage tanks and the Tembi pumping station, 6-inch line for the 46 miles between Tembi and Wais and an 8-inch line for the remaining 90 miles to Abadan, a total distance of 138 miles. The second pipe line was started in 1914 and an extension was added in 1921. The present main pipe line is built up of about 500 miles of 8, 10 and 12-inch pipe.

GULF OIL DIVIDEND

Gulf Oil Corp. declared the regular quarterly dividend of 37½ cents, payable January 1 to stock of record December 20.

Sulphur Water in Andrews County Test

Well Looks Good for 165 Bbls. Daily, However, and Will Result in Activity in That Area. Good Show in Menard County

By L. E. Bredberg
Staff Correspondent, West Texas Fields

FORT WORTH, Tex., Dec. 23.—While fishing for tools all week in Deep Rock Oil Co.'s No. 1 Ogden, in Andrews County, with the well flowing better than 165 bbls. daily from total depth of 4,395 feet, it looked good for at least 200 bbls. per day with tools out of the hole. However, when tools were recovered, drilling was resumed until sulphur water threatened to ruin the well at total depth of 4,428 feet where it now stands shut down. Two hundred and fifty feet of sulphur water was encountered here after an increase in oil was found from 4,403-09 feet and 4,415-18 feet in a softer formation of the lime. The first pay in this test was found at 4,345-48 feet and a second, the largest pay, was found from 4,361-66 feet.

This is the wildcat test which promised the opening of a new pool for the Permian basin, located at least 35 miles from the nearest production, the Llano Pool in Winkler County. Location of this new discovery is 330 feet from the south line and 2,310 feet from the east line of Section 6, Block A-46, Public School Lands, far from any pipe line or railroad, but as the Atlantic Oil Producing Co. owns an undivided one-fourth interest in the well and a block of acreage of approximately 10,000 acres around it, this company would probably lay a line from its Midland tank farm, 32 miles to the southeast, or would run a line down to its carrier out of the Winkler County Pool to Midland. The California Co. owns a like interest in the well and block of acreage but it has no production in the Winkler County Pool, nor any pipe line serving this district.

University Lands are located just a mile north of the well, and no doubt there will be considerable bidding by companies and operators on the 5,760 acres which are to be put up for bids by the University of Texas Board of Regens on January 20, 1930. Quarter and half-section lots are to be sold, carrying one-sixth royalty on oil and one-eighth on gas which may be produced from them. Rentals will run not less than $1 per acre per annum.

Will Test Well

The oil has a sulphur content and tests 29.1 gravity. The well will be plugged back and tested to see just what it will make on an open flow. Possibly a shot will be made in an endeavor to increase the production, but this is merely a conjecture, and it will be several days before anything definite is announced as to the intention of the owners. It has practically proven itself to be a 165-bbl. producer which is rather slight for a well at this depth, but it has opened up the area to further drilling, and the test to be made by the owners on a south offset location will help to determine the possibilities of this new field.

Glasscock County had another sign of encouragement this week when the California Co.'s No. 3 Currie, located 990 feet from the north and 2,310 feet from the east lines of Section 219, Block 29, W.&N.W., cored a porous lime, showing oil, from 3,022-31 feet. It is now shut down at the latter depth. This test is several miles south of the Settles Pool, and 11 miles southeast of the World Oil Co.'s discovery in Section 21, Block 34, Township 2-S, T.&P. Survey, Glasscock County.

Landreth Production Co.'s No. 1 Smithpeter, in the SE of Section 31, Block 11, H.&G.N. Survey, 2 miles northeast of the former Rowan & Tong and Independent producer in Section 46, Block 12, H.&G.N. Survey, Pecos County, also created some interest this week when the test topped a lime pay at 2,269 feet and filled up 300 feet with fluid, mostly oil, in 15 hours, from 11 a. m. December 19 to 2 a. m. December 20. The oil tested 28.3 gravity. It made about a quarter of a million feet of gas with the oil. Present total depth is 2,282 feet, but drilling was to be resumed this afternoon. It swabbed dry on the afternoon of the twentieth, but the fluid started rising at the rate of about 9 feet an hour, giving a note of encouragement to this area where nothing but discouragement has heretofore been registered by several dry holes.

Northeast of Rowan & Tong

To the northeast of the Rowan & Tong area the Jayhawk Oil Co.'s No. 1 Price, near the center of the south line of Section 6, Block 12, H.&G.N. Survey, was abandoned this week at 1,735 feet after encountering a hole full of sulphur water at 1,730 feet. This test has a showing of oil at 1,561 feet, but found no increases below that depth. It is located about 2 miles northeast of the former producer of the Indpendent Oil & Gas Co. and Rowan & Tong in Section 46, and rather cuts off the possibility of finding production in that direction from the old producer.

The Taylor-Link Oil Co.'s No. 10 University, located in the SE of Section 13, Block 18, in the Taylor-Link Pool, Pecos County, drilled deeper to 1,565 feet from the former total depth of 1,560 feet and encountered an increase in oil, the well flowing 992 bbls. the first 24 hours after deepening.

The Arkansas Fuel Oil Co.'s test, located in Section 32, Block 17, southeast of the Taylor-Link Pool, encountered an estimated 1,000,000 feet of gas at 935 feet in sand this week and was shut down at that depth to run 10-inch casing. This is another possibility in this area, and will be watched closely when casing is run and drilling resumed.

Cranfill & Reynolds' No. 1 Masterson, in Section 104, Block 10, H.&G.N. Survey, Pescos County, was put on the pump December 19, but as yet no pumping gauge has been reported. It was drilled to a total depth of 1,495 feet, but no increase was registered. However, it seemed to be heading more often, the heads still amounting to around 20 bbls. daily. Top of the pay of this wildcat is 1,439 feet.

Penn and Humble Oil & Refining Co.'s second test in the Judkins area of Ector County, located 330 feet from the north and 2,640 feet from the west lines of Section 16, Block 44, Townshhip 3-S, T.&P. Survey, a south offset to the discovery well in Section 7, topped the lime at 3,275 feet and encountered a showing of gas from 3,333-35 feet while drilling. It is now drilling below 3,350 feet and the next week should see this well producing if it is to encounter the pay found in the discovery. Pay in the discovery was encountered at 3,715-25 feet and the well bottomed at the latter depth. It also had a gas showing at 3,717 feet. The second test of this pool will be closely watched from its present depth on down.

Shell Petroleum Corp.'s No. 1 Owens, in the NE cor. of Section 16, Block 5, H.&T.C. Survey, Ward County, in the Shipley Pool, is driling below 3,037 feet with 2,400 feet of fluid in the hole, making one-half bailer of water hourly. It swabbed 83 bbls. net oil while standing at 3,015 feet, and encountered an increase in oil from 3,023-32 feet, but as yet is not promising much of a well. Top of the first pay was found at 2,886-93 feet and an increase was registered at 2,990 feet, both of these depths being far below the regular Shipley pay.

Menard County Showing

Barnett & Drake's No. 1 Callan, located in Section 1, B.S.&F. Survey, Menard County, which encountered a 10-bbl. showing of oil about two weeks ago at 1,132 feet, was drilled deeper and encountered an estimated 3,000,000 to 5,000,000 feet of gas in sand from 1,267-68 feet, the well now standing shut down at 1,268 feet. This is in absolutely wildcat territory, and the showings already encountered are of sufficient importance to demand other tests in this area, even though this test may not make a commercial producer. The oil found in these tests in Menard County is sweet and of high gravity, and, if a pool is eventually opened in this area, it will probably be of that grade of crude, which will command an outlet and a purchaser in a short time.

Roeser & Pendleton and Amerada Petroleum Corp.'s No. 1 National Bank of Waco, located in Section 204, B.B.&C. Survey, northeastern cor. of Fisher County, is apparently a failure in this area, for it encountered a lime at 3,102-40 feet with a showing of oil and a hole full of water, and a second lime from 3,150-58 feet carrying water. The water sands are in the same horizon as the Fisher County pay which is producing in the Roeser & Pendleton and Amerada's No. 1 Haught, the discovery to the east, in Section 191. It is also 49 feet lower structurally than the Haught well.

WEST TEXAS COMPLETIONS

Borden County

Teas & Wheeler's No. 1 Long, located 1,320 feet from north and east of Section 27, Block 30, Township 5-N, T.&P. R.R. Survey, topped the salt at 1,030 feet, topped the lime at 2,630 feet, was drilled to a total depth of 4,029 feet and was dry and abandoned.

Concho County

T. B. Slick's No. 1 Mosely, located 150 feet from south and west lines of NW Section 1,838, encountered water at 1,275 feet and was dry and abandoned at 1,282 feet.

Crane County

Gulf Production Co.'s No. 69 McElroy, located 1,120 feet from north and 660 feet from west of Section 185, Block F, C.C.S.D.&R.G.N.G.R.R. Survey, topped the salt at 1,180 feet, topped the lime at 2,797 feet, topped the pay at 2,928 feet, was drilled to a total depth of 3,010 feet and had an initial production of 130 bbls. Their No. 70 McElroy, located 1,660 feet from north, 2,310 feet from west of Section 201, Block F, topped the salt at 979 feet, topped the lime at 2,684 feet, topped the pay at 2,822 feet and was drilled to a total depth of 2,945 feet with an initial production of 150 bbls. Magnolia Petroleum Corp.'s No. 17 University-Hardwick, located 2,310 feet from north, 990 feet from west, Section 39, Block 30, University Land, topped the salt at 1,045 feet, topped brown lime at 2,750 feet, topped gray lime at 2,762 feet, topped the pay at 2,863 feet, was drilled to a total depth of 3,012 feet and had an initial production of 315 bbls. Republic Production Co.'s No. 1 Hughes, located 990 feet from north, 1,350 feet from west of Section 2, topped the salt at 620 feet, topped the lime at 2,180 feet, topped the pay at 2,395 feet, was drilled to a total depth of 2,409 feet and had an initial production of 50 bbls.

Garza County

Bill Thompson's No. 1 Tuffing, located 330 feet from south, 2,310 feet from west of Section 10, Block 6, was dry and abandoned at 2,610 feet.

Jones County

Mid-Tex Oil & Gas Co.'s No. 1 Minter was dry and abandoned at 2,302 feet.

Loving County

Lockhart & Co.'s No. 3 Allen, located 1,650 feet north, 330 feet east of Section

(Continued on Page 89)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended December 23

Company, farm and location—	Remarks—
ANDREWS COUNTY	
Deep Rock's No. 1 Ogden, 2,310 ft. E, 330 ft. S. Sec. 6, Blk. A-46, Public School Land	Top pay 4,345 ft.; top lime 4,050 ft.; drilled deeper to 4,428 ft.; encountered 300 ft. sulphur water; will probably be plugged back to shut off water.
BORDEN COUNTY	
Teas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur.	Top salt 1,030 ft.; drlg. 3,992 ft.
BREWSTER COUNTY	
E. W. Bateman et al's No. 2 Nevill, 2,000 ft. S and W line of Sec. 62, Blk. 13, G.H.&S.A.R.R. Sur.	Shut down 2,612 ft.
Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur.	Fishing 1,935 ft.
Forrest Oil Co.'s No. 1 Skinner, C SW SE, Sec. 100, Blk. 2, G.C.&S.F. Sur.	Drlg. 900 ft.; pulling 8-in. casing.
Grastorf et al's No. 1 Redfield, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.&S.F.R.R. Sur.	Drlg. 310 ft.
Van McPhail's No. 1 McIntyre, SE cor., Sec. 59, Blk. 352, 7 mi. S of Alpine	Shut down 1,740 ft.
COKE COUNTY	
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft.	Shut down 2,892 ft.
Mid-Kansas Oil Co.'s No. 1 W. E. Lackey, 330 ft. N and E of SW cor., Sec. 272, Blk. 1-A, H.&T.C. Sur.	Pay 3,755-56 ft.; 6⅝-in. casing set 3,451 ft.; underreaming at 4,058 ft.; total depth 4,250 ft.; waiting orders to plug.
CONCHO COUNTY	
Duffy et al's No. 1 Callan, 1,520 ft. N and 1,120 ft. W of SE cor., Sec. 21, Blk. 10, H.&T.C.R.R. Sur.	Spudded and shut down.
Turner et al's No. 1 Borsig, 150 ft. from S of SE cor., G. Emmig Sur. 130, 6 mi. W of Paint Rock	Shut down 735 ft.
CRANE COUNTY	
Church & Field's No. 5 University-Duall, 990 ft. from W, 1,650 ft. from S, Sec. 39, Blk. 30	Rig.
Church-Weekly's No. 1 University, Sec. 34, Blk. 30, 2,310 ft. from N and E, University Land	Drlg. 475 ft.
Duffey et al's No. 7 Cowden Bros., 1,320 ft. from S and 1,420 ft. from E of Sec. 18, Blk. X, C.C.S.D.&R.G.N.G.R.R. Sur.	Rigging up.
Humble Oil & Ref. Co.'s No. 1-E University, 2,310 ft. from N and 930 ft. from E, Sec. 40, Blk. 30, University Land	Rigging up.

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the Southeastern Oil Co. has made a location on the John Slider farm.

Drilling and Starting New Work

In Liberty district, Marshall County, the Manufacturers Light & Heat Co. is moving tools to a location on the Wiley A. Evans farm. In the same district, the same company has made a location on the George McCracken farm. In Cameron district, Marshall County, the same company has made a location on the J. M. Wellman farm. In the same district, C. B. and A. C. Patterson have shut down at 2,850 feet. In Church district, Wetzel County, Spencer H. Stockdale has drilled to a depth of 3,255 feet on the William Hixenbaugh farm and shut down. In Liberty district, the Manufacturers Light & Heat Co. has made a location on the George McCaskey farm.

In Curtis district, Roane County, the United Fuel Gas Co. has a rig up on the M. Hart farm on Frozen Camp Run, 3,000 feet north of the Virginian Gas & Oil Co.'s test on the White farm. In Sherman district, Calhoun County, the Southeastern Gas Co. has completed a rig on the Chess Polling farm. In McFarland Creek, Murphy district, Ritchie County, the South Penn Oil Co. has the rig completed for No. 1 on the E. Bickerstaff farm. In Paw Paw district, Marion County, the Owens Bottle & Machine Co. is due in the sand on the Edgar Fox farm. The same company is also due in the sand on the Z. E. and A. Michael farm.

CENTRAL WEST FIELDS

(Continued from Page 74)

900 on the Lawrence T. Parsons farm. Section 3, Penn Township, in the Salt sand from 755-68 feet.

Vinton County

In Vinton County, the Hope Construction & Refining Co.'s No. 1 on the Dan Bass farm, Knox Township, is reported good for 5 bbls.

The Ohio Fuel Gas Co. has a light showing of oil in the Berea sand from 1,244-55 feet, in No. 1-4,892 on the D. W. Rucker farm, Section 29, Symmes Township, Lawrence County, but may drill for a deeper pay sand.

In Tuscarawas County, Washington Township, the Smetts Oil & Gas Co.'s second test on the G. W. Smetts farm, Lot 35, is reported good for 10 bbls. Top of the Niagara lime was found in this well at 3,334 feet and the oil pay from 3,500-02 feet. Ohio Fuel Gas Co. made a location on the Anna Meek farm, Lot 31, same township.

In Guernsey County, the Preston Oil Co. has a nice gas well in No. 3-1,371 on the J. C. Alloway farm, Section 10, in the upper Berea sand from 1,181-89 feet, total depth 1,191 feet. Kemrow Co. made a location on the J. H. Fowler farm, same section.

INDIANA

The feature of Indiana development was the bringing in of an oil well far above the average by William Bell and others, 600 feet from the north line and 200 from the west line of the Fred Lindy farm, NW Section 31, Clay Township, Pike County, which had an initial production of 100 bbls. from 1,314-24 feet, the largest well found in the southwestern part of the State for some time. No. 2, same farm, is drilling. F. B. Hillis, trustee, who a short time ago found a remarkably good well in No. 2 on the W. H. Lindy farm, same section, is about due to bring in No. 3. This Bell well was the only one completed for the week. In Washington Township, Gibson County, the Murphy Oil Co. of Pennsylvania abandoned No. 4 on the L. C. Frederick farm, NE Section 6. The Shell Petroleum Corp. and the Indiana Oil & Gas Corp., according to advices, will do considerable test work in southwestern Indiana.

Jasper County, in the western part of the State, about 90 miles southwest of South Bend, is in for a good testing. This is in the Kankakee Valley territory, which many years ago produced a fine grade of lubricating oil at very shallow depths, varying from 50 to 200 feet, with three lower sands to find production. The Mich-Ohio Oil Co. contemplates the drilling of 10 tests in that part of the State to test the Niagara, Clinton and Trenton limestone formations which exist there. The work is to be done under the supervision of George C. Christman.

ILLINOIS

Operations are slowing down to some extent in the Dupo Field in Sugar Loaf Township, St. Clair County, south of East St. Louis. This has been the most actively developed field in Illinois for a number of years, as the wells are shallow and require but a short drilling job. Three wells were completed during the deek. The Ohio Oil Co.'s No. 1 on the George Lindemann, Sections 28-21, produced 25 bbls. in 24 hours from 494 to 525 feet. Lon Sanders and others' No. 3 well, 1,100 feet from the north line and 535 feet from the east line of the Pauline Eckert farm, SW Section 34, same township, pumped 35 bbls. from 731-74 feet. Frank Thethoff and others' test on the Harry Young, SW Section 13, developed into a dry hole from 1,104 to 1,214 feet.

The best completion of the late wells in the older Illinois producing area was Snowden-McSweeney's No. 46, located 600 feet from the north and east lines of the C. B. O'Donnell farm, SE Section 17, Bridgeport Township, Lawrence County, with an initial of 100 bbls. from the 1,284-foot sand. This is about the depth that the Buchanan sand is encountered. Drilling was started on this lease back more than 20 years ago. In Petty Township, same county, the Ohio Oil Co. abandoned No. 8 Oris Pepple, NW Section 13; Nos. 1 and 3 George E. Cessna, SE Section 11; No. 11 J. W. Rodrick, NE Section 26; No. 5 Richard Judy, SE Section 1, and Nos. 4 and 7 R. M. Harsacre No. 2 farm, SW Section 6.

Trenton Rock Oil & Gas Co. made a nice strike in No. 7 well, 660 feet from the north and east lines of the S. W. McClelland, NW Section 30, Martinsville Township, Clark County, the well showing 45 bbls. initial at a depth of 1,700 feet. Near Allendale, in Wabash Township, Wabash County, the Adams Corner Oil Co.'s test 200 feet from the north line and 600 feet from the west line of the S. H. Price farm, NE Section 14, and just south of Allendale, at 1,499 feet, came in a duster.

KENTUCKY-TENNESSEE

(Continued from Page 78)

there had been only a few leases taken on the south side up to the time the new well came in.

Pipe Line Extension

Reports are that the Illinois Pipe Line Co. is planning extension of its lines from the main line in Daviess County to the Niagara Field in Henderson and Webster Counties, and pipe the oil from that field to Owensboro, where it will join the main line running into Indiana, thence to Lawrenceville, Ill. The length of the line has not been announced. There are approximately 30 producing wells in the vicinity of Niagara about 10 miles southeast of Henderson, all being capped for the want of a market. Under the plan just announced, six pumps will be placed in and near Niagara, operating all of the producing wells in that vicinity. It is estimated that the present output of the field is close around 600 bbls. a day, with drillers bringing in new wells almost weekly. The best well in the field is said to be good for 100 bbls. a day.

Gas Franchises

Permits have been granted the Missouri-Kansas Pipe Line Co. to distribute natural gas in two Indiana industrial communities, Cannelton and Tell City, across the Ohio River from the Owensboro oil and gas fields. Service in these two towns will inaugurate activities for Missouri-Kansas in Indiana. The Indiana-Kentucky Natural Gas Corp. is a subsidiary in order to furnish gas to Indiana markets in its territory. These two latest franchises now give Missouri-Kansas six communities in that area for distribution of its products, franchises for five of them having been obtained in the last 60 days.

EASTERN KENTUCKY

Report comes from Barbourville, Knox County, in eastern Kentucky, that Tulsa, Okla., operators found a heavy flow of gas on the Gilliam farm, 6 miles from Barbourville at a depth of 400 feet, but will be drilled to the Epperson sand which lies at a depth around 900 feet, to thoroughly test it.

A summary of the week's work in Kentucky shows 18 completions, 16 producers with an initial production of 972 bbls., 1 dry hole and one gas well.

County—	Comp.	Oil	Prod.	Dry	Gas
Ohio	11	11	910	0	0
Daviess	4	3	55	1	0
Hancock	2	1	2	0	1
McLean	1	1	5	0	0
Total	18	16	972	1	1

Ohio County Wells

The big noise in Ohio County at this time is the new Buford or Jolly Pool, in the western part of the county and close to 2 miles west and a little north of the Barnett's Creek Church Pool. The excitement started in the new pool when C. M. Root and others brought in the initial well late in November on the Nancy Wiggington 96 acres, just east of the Vincent Steele farm, better known as the Chicken farm, which produced an initial better than 500 bbls. Last week the second well on the Wiggington, came in at a 500-bbl. initial rate and since then Nos. 3, 4 and 5 have been brought in all in the Stray sand and reported at around 150 bbls. each. Just east of the Wiggington farm, Hupp and Duff drilled in Nos. 2 and 3 on the J. A. Stewart farm, reported at around 100 bbls. for No. 2 and 200 bbls. initial for No. 3. These two leases have shut down operations until January 15.

Near Oklahoma, in Ohio County, northwest of the Ambrose-Weller Pool, White and Vickers' No. 3 on the Willie Mills farm, is reported as good for 20 bbls. initial. No. 4, same farm, is reported at 35 bbls. initial.

In the Deanfield Pool, S. H. Russell and others' No. 11 Greer farm, came in at 35 bbls. initial. In this well a string of 669 feet of casing was set, pay sand from 681-84 feet, total depth 705 feet. Same firm's No. 4, on the W. Midkiff farm, same pool, produced an initial of 50 bbls. In this well a string of 670 feet of casing was set and pay sand from 682-705 feet.

Fred Weir and others' second test on the Guy Muffett 84 acres, Deanfield Pool, produced an initial of 10 bbls. from a total of 685 feet. In this hole a string of 645 feet of casing was set and pay sand from 663-80 feet.

In the Howard Pool, J. E. Hare's No. 4, on the W. L. Howard 20 acres, is a 10-bbl. initial pumper. A string of 402 feet of casing was set, pay sand from 410-20 feet.

Daviess County Wells

In the Owensboro Field, Daviess County, Utica Pool, the Petroleum Exploration Co.'s test on the M. Clark farm, produced an initial of 25 bbls.

Creek Drilling Co.'s wildcat on the Ward farm, near the town of Delaware in the extreme western part of Daviess County, came in a duster at a total depth of 1,870 feet. This test is quite a distance west of this company's production in the St. Joseph area, where a few wells are producing oil, and has been connected to the Illinois Pipe Line Co.'s line. Same company's No. 2, on the Floyd Kirk lease, in the Utica Field, is a 5-bbl. pumper at 1,410 feet.

Near Calhoun in McLean County, the Ohio Oil Co.'s No. 2, on the G. B. McManama No. 2 farm, is reported good for 5 bbls.

East of Pellville, near Victoria, in Hancock County, the Missouri-Kansas Pipe Line Co., has a light gas well at a test on the Charles Vogles farm, and H. H. Vickers and others' No. 3, in the northeast corner of the Birch Parrott farm, 3 miles east of Pellville, produced but 2 bbls., under pump.

Cold Weather Hampers Work

Ellis and Young are down close around 1,000 feet in No. 3 on the Rice Brothers, or Preecher Woodson farm, in the Greenville Field of Mulhenberg County. The cold weather hampered development work in the field and while there are 10 strings of tools working, none of them is close to the producing sand.

Evans & Garrison are drilling No. 9 on the Davis heirs' farm, in the Utica Pool, of Daviess County. Cumberland Petroleum Co. is drilling No. 7 on the Isabella Salmon farm, in the Salmon Pool, same county. White & Coffey are working at No. 1 on the Hogan farm, near Whitesville. Creek Drilling Co. is starting an offset to the good wells on the Davis heirs' farm, on what is known as the Panther Creek Land Co.'s property, in the Utica Pool. Tim McGraw and Jesse G. Watts started a well on the Sloane farm, near Fuqua, in the Jones Pool, same county.

The Ohio Oil Co. has acquired 15,000 acres of oil and gas rights from L. K. Hickman, Madisonville business man, at an undisclosed consideration. It is understood the company plans to develop the acquired acreage in the spring. This acreage is in Hopkins County.

The Kentucky Natural Gas & Development Co., Hopkinsville, has located a test and will drill for gas on the Poe farm, in Hopkins County, near the Howell Lester farm, where the Missouri-Kansas Pipe Line Co. has two of the largest gas wells in western Kentucky.

ABSORPTION PLANT IN PERSIA

The absorption plant of the Anglo-Persian Oil Co., Ltd., at Masjid-i-Sulaiman, Persia, is capable of handling upwards of 20,000,000 feet of gas daily. The natural gasoline obtained is pumped from storage tanks into the crude oil pipe line and is transported to the refinery at Abadan, where it is extracted from the crude by topping and used for blending with other refinery products, mainly straightrun gasoline to make "BP," the Anglo-Persian motor spirit. Liquefied propane and butane are marketed in cylinders under the name of "Gasol," chiefly in replacement of acetylene in oxygas welding.

GASOLINE DEMAND IN INDIA

Refineries in British India have produced from 1,000,000 to 1,400,000 bbls. of gasoline annually since 1920. Imports have been negligible throughout the period, but exports, which amounted to approximately two-thirds of the gasoline production in 1920, have decreased annually as the increasing demand for motor fuel called for larger and larger proportions of the local production. At present, the local demand is about equal to the local production, which is in the neighborhood of 1,400,000 bbls. yearly.

INDUSTRY'S START IN PERSIA

Well No. 1, now known as B-1, of the Anglo-Persian Oil Co., Ltd., was started at Masjid-i-Sulaiman on January 23, 1908, and was completed on May 26, at a depth of 1,179 feet, with a production of about 230 bbls. daily. This well first indicated that oil in commercial quantities existed in Persia. The first pipe line was completed in June, 1911, and the first oil was pumped from fields to the refinery at Abadan in September of that year. Only four wells had been completed at that time, but these gave a production sufficient for the needs of that period. The first pipe line was a composite one, consisting of an 8-inch line for the 2 miles between the field's storage tanks and the Tembi pumping station, 6-inch line for the 46 miles between Tembi and Wais and an 8-inch line for the remaining 90 miles to Abadan, a total distance of 138 miles. The second pipe line was started in 1914 and an extension was added in 1921. The present main pipe line is built up of about 500 miles of 8, 10 and 12-inch pipe.

GULF OIL DIVIDEND

Gulf Oil Corp. declared the regular quarterly dividend of 37½ cents, payable January 1 to stock of record December 20.

Sulphur Water in Andrews County Test

Well Looks Good for 165 Bbls. Daily, However, and Will Result in Activity in That Area. Good Show in Menard County

By L. E. Bredberg
Staff Correspondent, West Texas Fields

FORT WORTH, Tex., Dec. 23.—While fishing for tools all week in Deep Rock Oil Co.'s No. 1 Ogden, in Andrews County, with the well flowing better than 165 bbls. daily from total depth of 4,395 feet, it looked good for at least 200 bbls. per day with tools out of the hole. However, when tools were recovered, drilling was resumed until sulphur water threatened to ruin the well at total depth of 4,428 feet where it now stands shut down. Two hundred and fifty feet of sulphur water was encountered here after an increase in oil was found from 4,403-09 feet and 4,415-18 feet in a softer formation of the lime. The first pay in this test was found at 4,345-48 feet and a second, the largest pay, was found from 4,361-66 feet.

This is the wildcat test which promised the opening of a new pool for the Permian basin, located at least 35 miles from the nearest production, the Llano Pool in Winkler County. Location of this new discovery is 330 feet from the south line and 2,310 feet from the east line of Section 6, Block A-46, Public School Lands, far from any pipe line or railroad, but as the Atlantic Oil Producing Co. owns an undivided one-fourth interest in the well and a block of acreage of approximately 10,000 acres around it, this company would probably lay a line from its Midland tank farm, 32 miles to the southeast, or would run a line down to its carrier out of the Winkler County Pool to Midland. The California Co. owns a like interest in the well and block of acreage but it has no production in the Winkler County Pool, nor any pipe line serving this district.

University Lands are located just a mile north of the well, and no doubt there will be considerable bidding by companies and operators on the 5,760 acres which are to be put up for bids by the University of Texas Board of Regens on January 20, 1930. Quarter and half-section lots are to be sold, carrying one-sixth royalty on oil and one-eighth on gas which may be produced from them. Rentals will run not less than $1 per acre per annum.

Will Test Well

The oil has a sulphur content and tests 29.1 gravity. The well will be plugged back and tested to see just what it will make on an open flow. Possibly a shot will be made in an endeavor to increase the production, but this is merely a conjecture, and it will be several days before anything definite is announced as to the intention of the owners. It has practically proven itself to be a 165-bbl. producer which is rather slight for a well at this depth, but it has opened up the area to further drilling, and the test to be made by the owners on a south offset location will help to determine the possibilities of this new field.

Glasscock County had another sign of encouragement this week when the California Co.'s No. 3 Currie, located 990 feet from the north and 2,310 feet from the east lines of Section 219, Block 29, W.&N.W., cored a porous lime, showing oil, from 3,022-31 feet. It is now shut down at the latter depth. This test is several miles south of the Settles Pool, and 11 miles southeast of the World Oil Co.'s discovery in Section 21, Block 34, Township 2-S, T.&P. Survey, Glasscock County.

Landreth Production Co.'s No. 1 Smithpeter, in the SE of Section 31, Block 11, H.&G.N. Survey, 2 miles northeast of the former Rowan & Tong and Independent producer in Section 46, Block 12, H.&G.N. Survey, Pecos County, also created some interest this week when the test topped a lime pay at 2,269 feet and filled up 300 feet with fluid, mostly oil, in 15 hours, from 11 a. m. December 19 to 2 a. m. December 20. The oil tested 28.3 gravity. It made about a quarter of a million feet of gas with the oil. Present total depth is 2,282 feet, but drilling was to be resumed this afternoon. It swabbed dry on the afternoon of the twentieth, but the fluid started rising at the rate of about 9 feet an hour, giving a note of encouragement to this area where nothing but discouragement has heretofore been registered by several dry holes.

Northeast of Rowan & Tong

To the northeast of the Rowan & Tong area the Jayhawk Oil Co.'s No. 1 Price, near the center of the south line of Section 6, Block 12, H.&G.N. Survey, was abandoned this week at 1,735 feet after encountering a hole full of sulphur water at 1,730 feet. This test has a showing of oil at 1,561 feet, but found no increases below that depth. It is located about 2 miles northeast of the former producer of the Indpendent Oil & Gas Co. and Rowan & Tong in Section 46, and rather cuts off the possibility of finding production in that direction from the old producer.

The Taylor-Link Oil Co.'s No. 10 University, located in the SE of Section 13, Block 18, in the Taylor-Link Pool, Pecos County, drilled deeper to 1,565 feet from the former total depth of 1,560 feet and encountered an increase in oil, the well flowing 992 bbls. the first 24 hours after deepening.

The Arkansas Fuel Oil Co.'s test, located in Section 32, Block 17, southeast of the Taylor-Link Pool, encountered an estimated 1,000,000 feet of gas at 935 feet in sand this week and was shut down at that depth to run 10-inch casing. This is another possibility in this area, and will be watched closely when casing is run and drilling resumed.

Cranfill & Reynolds' No. 1 Masterson, in Section 104, Block 10, H.&G.N. Survey, Pescos County, was put on the pump December 19, but as yet no pumping gauge has been reported. It was drilled to a total depth of 1,495 feet, but no increase was registered. However, it seemed to be heading more often, the heads still amounting to around 20 bbls. daily. Top of the pay of this wildcat is 1,439 feet.

Penn and Humble Oil & Refining Co.'s second test in the Judkins area of Ector County, located 330 feet from the north and 2,640 feet from the west lines of Section 16, Block 44, Townshhip 3-S, T.&P. Survey, a south offset to the discovery well in Section 7, topped the lime at 3,275 feet and encountered a showing of gas from 3,333-35 feet while drilling. It is now drilling below 3,350 feet and the next week should see this well producing if it is to encounter the pay found in the discovery. Pay in the discovery was encountered at 3,715-25 feet and the well bottomed at the latter depth. It also had a gas showing at 3,717 feet. The second test of this pool will be closely watched from its present depth on down.

Shell Petroleum Corp.'s No. 1 Owens, in the NE cor. of Section 16, Block 5, H.&T.C. Survey, Ward County, in the Shipley Pool, is driling below 3,037 feet with 2,400 feet of fluid in the hole, making one-half bailer of water hourly. It swabbed 83 bbls. net oil while standing at 3,015 feet, and encountered an increase in oil from 3,023-32 feet, but as yet is not promising much of a well. Top of the first pay was found at 2,886-93 feet and an increase was registered at 2,990 feet, both of these depths being far below the regular Shipley pay.

Menard County Showing

Barnett & Drake's No. 1 Callan, located in Section 1, B.S.&F. Survey, Menard County, which encountered a 10-bbl. showing of oil about two weeks ago at 1,132 feet, was drilled deeper and encountered an estimated 3,000,000 to 5,000,000 feet of gas in sand from 1,267-68 feet, the well now standing shut down at 1,268 feet. This is in absolutely wildcat territory, and the showings already encountered are of sufficient importance to demand other tests in this area, even though this test may not make a commercial producer. The oil found in these tests in Menard County is sweet and of high gravity, and, if a pool is eventually opened in this area, it will probably be of that grade of crude, which will command an outlet and a purchaser in a short time.

Roeser & Pendleton and Amerada Petroleum Corp.'s No. 1 National Bank of Waco, located in Section 204, B.B.&C. Survey, northeastern cor. of Fisher County, is apparently a failure in this area, for it encountered a lime at 3,102-40 feet with a showing of oil and a hole full of water, and a second lime from 3,150-58 feet carrying water. The water sands are in the same horizon as the Fisher County pay which is producing in the Roeser & Pendleton and Amerada's No. 1 Haught, the discovery to the east, in Section 191. It is also 49 feet lower structurally than the Haught well.

WEST TEXAS COMPLETIONS

Borden County

Teas & Wheeler's No. 1 Long, located 1,320 feet from north and east of Section 27, Block 30, Township 5-N, T.&P. R.R. Survey, topped the salt at 1,030 feet, topped the lime at 2,630 feet, was drilled to a total depth of 4,029 feet and was dry and abandoned.

Concho County

T. B. Slick's No. 1 Mosely, located 150 feet from south and west lines of NW Section 1,838, encountered water at 1,275 feet and was dry and abandoned at 1,282 feet.

Crane County

Gulf Production Co.'s No. 69 McElroy, located 1,120 feet from north and 660 feet from west of Section 185, Block F, C.C.S.D.&R.G.N.G.R.R. Survey, topped the salt at 1,180 feet, topped the lime at 2,797 feet, topped the pay at 2,928 feet, was drilled to a total depth of 3,010 feet and had an initial production of 130 bbls. Their No. 70 McElroy, located 1,660 feet from north, 2,310 feet from west of Section 201, Block F, topped the salt at 979 feet, topped the lime at 2,684 feet, topped the pay at 2,822 feet and was drilled to a total depth of 2,945 feet with an initial production of 150 bbls. Magnolia Petroleum Corp.'s No. 17 University-Hardwick, located 2,310 feet from north, 990 feet from west, Section 39, Block 30, University Land, topped the salt at 1,045 feet, topped brown lime at 2,750 feet, topped gray lime at 2,762 feet, topped the pay at 2,863 feet, was drilled to a total depth of 3,012 feet and had an initial production of 315 bbls. Republic Production Co.'s No. 1 Hughes, located 990 feet from north, 1,350 feet from west of Section 2, topped the salt at 620 feet, topped the lime at 2,180 feet, topped the pay at 2,395 feet, was drilled to a total depth of 2,409 feet and had an initial production of 50 bbls.

Garza County

Bill Thompson's No. 1 Tuffing, located 330 feet from south, 2,310 feet from west of Section 10, Block 6, was dry and abandoned at 2,610 feet.

Jones County

Mid-Tex Oil & Gas Co.'s No. 1 Minter was dry and abandoned at 2,302 feet.

Loving County

Lockhart & Co.'s No. 3 Allen, located 1,650 feet north, 330 feet east of Section

(Continued on Page 89)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended December 23

ANDREWS COUNTY

Company, farm and location—	Remarks—
Deep Rock's No. 1 Ogden, 2,310 ft. E, 330 ft. S, Sec. 6, Blk. A-46, Public School Land	Top pay 4,345 ft.; top lime 4,050 ft.; drilled deeper to 4,428 ft.; encountered 300 ft. sulphur water; will probably be plugged back to shut off water.

BORDEN COUNTY

Teas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur.	Top salt 1,030 ft.; drlg. 3,992 ft.

BREWSTER COUNTY

E. W. Bateman et al's No. 2 Nevill, 2,000 ft. S and W line of Sec. 62, Blk. 13, G.H.&S.A.R.R. Sur.	Shut down 2,612 ft.
Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur.	Fishing 1,935 ft.
Forrest Oil Co.'s No. 1 Skinner, C SW SE, Sec. 100, Blk. 2, G.C.&S.F. Sur.	Drlg. 900 ft.; pulling 8-in. casing.
Grastorf et al's No. 1 Redfield, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.&S.F.R.R. Sur.	Drlg. 310 ft.
Van McPhail's No. 1 McIntyre, SE cor., Sec. 59, Blk. 352, 7 mi. S of Alpine	Shut down 1,740 ft.

COKE COUNTY

Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft.	Shut down 2,892 ft.
Mid-Kansas Oil Co.'s No. 1 W. E. Lackey, 330 ft. N and E of SW cor., Sec. 272, Blk. 1-A, H.&T.C. Sur.	Pay 3,755-56 ft.; 6⅝-in. casing set 3,451 ft.; underreaming at 4,058 ft.; total depth 4,250 ft.; waiting orders to plug.

CONCHO COUNTY

Duffy et al's No. 1 Callan, 1,520 ft. N and 1,120 ft. W of SE cor., Sec. 21, Blk. 10, H.&T.C.R.R. Sur.	Spudded and shut down.
Turner et al's No. 1 Borsig, 150 ft. from S of SE cor., G. Emmig Sur. 130, 6 mi. W of Paint Rock	Shut down 735 ft.

CRANE COUNTY

Church & Field's No. 5 University-Duall, 990 ft. from W, 1,650 ft. from S, Sec. 39, Blk. 30	Rig.
Church-Weekly's No. 1 University, Sec. 34, Blk. 30, 2,310 ft. from N and E, University Land	Drlg. 475 ft.
Duffey et al's No. 7 Cowden Bros., 1,320 ft. from S and 1,420 ft. from E of Sec. 18, Blk. X, C.C.S.D.&R.G. N.G.R.R. Sur.	Rigging up.
Humble Oil & Ref. Co.'s No. 1-E University, 2,310 ft. from N and 930 ft. from E, Sec. 40, Blk. 30, University Land	Rigging up.

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Proration for Gray County Planned

Committee Appointed to Consider Matter. Additional Pipe Line Facilities Being Constructed. Crude Runs Reduced

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Dec. 23—Curtailment of production and proration seems to be the main topics of interest in the Panhandle and Wichita Falls districts, although the operators of Gray County have heretofore prevented needless development and have materially aided in cutting down production in that county by voluntary plans worked out at previous meetings of representatives of producing and pipe lines companies and operators.

On December 19, producers and pipe line representatives met at Pampa, Tex., and again discussed the problem of curtailing overproduction in that area. H. M. Stalcup of Tulsa, Okla., vice president of the Skelly Oil Co., presided, and named J. L. McMahan of The Texas Company, Wichita Falls; Stewart Dewar of the Phillips Production Co., and E. B. McFarlin of the McMan Oil & Gas Co. as a committee to draft proration plans for adoption at the next meeting to be held at Pampa, December 27. Heretofore, proration has been dispensed with by the companies shutting down wells on top of the pay, and by voluntary curtailment, but it is now firmly believed that proration is the only method to be used in giving all producers in the Gray County fields a square deal and helping them to receive pipe line outlet for their production. The Texas Pipe Line Co. has started construction on three additional units of its main 8-inch line out of the Panhandle to the south, which will increase the capacity of the line to around 62,000 bbls. daily, and give some relief to Gray County.

While the above company is raising the capacity of its line out of Gray County, the Humble Pipe Line Co. put into effect a 50 per cent cut on its runs, also cutting 50 per cent of its Wilbarger runs in the Wichita Falls district, this cut to go into effect January 1. Due to drilling obligations on the Waggoner Ranch, and completion of several good wells from the deeper pay in the Sigler Pool, Wilbarger County is also becoming congested by flush production.

Good Well Completed

The Atlantic Oil Producing Co. and Sigler's No. 6 Waggoner, located 510 feet from the north line and 1,977 feet from the east line of Section 35, Block 2, H.&T.C. Survey, was one of the big wells of the week in the 2,600-foot pay horizon. It topped the lime at 2,651 feet and was completed at a total depth of 2,679 feet, flowing 800 bbls. in 24 hours. The Davis Oil Corp.'s No. 5-A Waggoner, 1,161 feet from the north line and 1,030 feet from the east line of the same section and survey, was another good well from pay topped at 2,644 feet. It was bottomed at 2,674 feet, flowing 452 bbls. in 24 hours. The Waggoner Refining Co. completed its No. 4-P Waggoner, in the same section and survey, for a 510-bbl. well from pay topped at 2,654 feet. It went to a total depth of 2,682 feet but was plugged back to 2,676 feet. Other large wells were completed in this pool last week, and the flush production of the new wells is becoming a menace to the pipe line situation.

A 6-inch line to be built by the Waggoner estate, extending its present pipe line system from its refinery and tank farm at Electra to Wichita Falls, will be of considerable help in relieving the congested situation of Wilbarger County, but it will be several weeks before this 25 miles of pipe can be laid and ready for use. It is understood that refineries located at Wichita Falls will take crude from this line. At present some of them are being furnished oil from the Continental Pipe Line Co.'s line which transports crude from the Waggoner pasture to Wichita Falls.

In northern Young County, the Riggs and others' No. 1 Allison-Keeter, in the NW cor. of Section 150, T.E.&L. Survey, has commanded much attention, and brought about high-powered and heavy lease trading in the area. The well pumped 225 bbls. in 24 hours from sand found from 859-64 feet, bottom of the hole being 864 feet. This discovery is 2 miles north of the town of Orth and 2 miles east of the pool on the Whitehead Ranch in Section 166. One-half mile to the west is a dry hole which went to a total depth of 995 feet, and in the SE of Section 150 there is a dry hole. Production can run to the north and northeast and opens up the possibility of considerable production around the discovery.

Montague County

Montague County scored a small producer in Lesh & McCalls' No. 1 Cunningham, located 183 feet from the east and 150 feet from the south of their lease in the L. Mort Survey. It topped the pay at 921 feet and was completed at 946 feet as a 25-bbl. pumper.

The Texas and Pacific Coal & Oil Co. has made a location for No. 29 J. E. Butler, in the John Yourk Survey, in the Butler Pool, Eastland County, which will go to the Ranger sand, but, if production is not found in commercial quantities from that pay horizon, the well may be carried down possibly past 6,000 feet. A deep test is not intended at the present time, but the well is to be equipped so that deep drilling may be carried on later.

Prairie Oil & Gas Co. and Amerada Petroleum Corp.'s No. 1 Vick, located in the N half of the L. J. Pitts Survey, northwestern Palo Pinto County, which created considerable attention last week when it topped the Strawn sand from 1,550-56 feet and started filling with oil while shut down at the latter depth; it flowed 35 bbls. of oil in 7½ hours one day during the week. It is now waiting for a connection to be made by the Prairie Pipe Line Co. Approximately 7 miles of pipe will have to be strung to connect the well with an outlet. The discovery is estimated good for 200 bbls. per day. This well will call for more tests around it. The Vacuum Oil Co. owns several sections to the east of Prairie's and Amerada's acreage, and Kidney & Lester have several sections on the northeast.

Announce Drilling Program

In Shackelford and Callahan Counties the Humble Oil & Refining Co. has announced an 18-well program to test its acreage located to the north and west of the Jackson area whichh has been recently opened. It is understood its leases expire in 1930, consequently call for immediate drilling. Four of these tests will be located in Shackelford County and 14 in Callahan, 6 of them to be drilled by contractors and 12 with company tools.

In Coleman County, the Roberts Oil Corp. topped the sand at 2,150 feet and drilled to 2,180 feet, having 1,200 feet of oil in the hole. The well is now cleaning ahead of the pipe. The sand in this test correlates with the Cheney No. 1-C Overall in the Overall Pool. The Roberts test is located in the southeastern corner of the Josias B. Beall Survey, offsetting Jim McCamey's No. 1 Rae, to the west. The McCamey test was abandoned as dry, but a test to the south of it by McCamey was completed about three weeks ago as a small producer, and the Roberts well was drilled on the strength of the producer completed.

Lloyd Oil Corp.'s No. 2 Bartholomew, located 150 feet from the south and 555 feet from the west of the William Farris Survey No. 279, 9 miles south of Santa Anna, in the new pool recently opened up by the Joines' No. 1 Stewardson, was completed for 310 bbls. in the Breneke sand from 1,439-44 feet. Another test in this pool, by the Tidal Oil Co., was completed for 157½ bbls. the first 24 hours and increased to 225 bbls. daily from sand topped at 1,433 feet. Total depth is 1,443 feet. This well is on the Stewardson farm, a west offset to the Lloyd Oil Corp.'s No. 1 Bartholomew. Kidney & Kamon and Western's No. 1 Pfluegger, a south offset to Lloyd's No. 1 well, is good for around 100 bbls. daily with 8,000,000 feet of gas. It is considered as the highest well in the pool, on top of the sand.

This pool has been one of the most, if not the most, interesting area in Coleman County for some time, and daily production on December 17, from five wells, was 520 bbls.

The Eastland Pool in the same county produced 2,800 bbls. on December 17, and the George Pool, Brown County, produced 1,780 bbls. on the same day. There are 40 producing wells in the latter pool.

WICHITA COMPLETIONS

Baylor County

Barnsdall Oil Co.'s No. 1 Portwood was dry and abandoned at 1,481½ feet. Consolidated Oil Co.'s No. 3 Portwood had an initial production of 125 bbls. at 1,403-05 feet. Grisham-Barnsdall's No. 1 Portwood was dry and abandoned at 1,502 feet.

Throckmorton County

Less Combest and others' No. 1 Horton was dry and abandoned at 390 feet. Shappell Oil Co.'s No. 7 U.C.S.L. was dry and abandoned at 735 feet.

Young County

Alexander's No. 1 Drum was dry and abandoned at 540 feet. Allday's No. 1 Petty & Miller was dry and abandoned at 593 feet. Beavers & Moran's No. 1 Millinax was dry and abandoned at 1,100 feet. Bratcher's No. 3 Culler had an initial production of 35 bbls. at 547-69 feet and was drilled to a total depth of 580 feet. Continental and Underwood's No. 4 Campbell was dry and abandoned at 1,051 feet. Goldsmith's No. 1 Rogers was dry and abandoned at 904 feet. Goldsmith and King Royalty's No. 7 Kunkel had an initial production of 165 bbls. at 1,130-47 feet. Richardson Oil Corp.'s No. 2 Dean had an initial production of 10 bbls. at 527-54 feet. Sun Oil Co.'s No. 16 Deitrich had an initial production of 150 bbls. at 1,144-53 feet. Western Production Co.'s No. 1 Suite was dry and abandoned at 1,404 feet. Wise & Jackson's No. 6 Cullers had an initial production of 18 bbls. at 567-80 feet and was drilled to a total depth of 591 feet. Wootten & Reed's No. 3 Casey was dry and abandoned at 654 feet. Their No. 2 Fisher was dry and abandoned at 610 feet. Mann and others' No. 3 Whittenburg had an initial production of 105 bbls. at 2,573-77 feet.

Wichita County

Mid-Continent Holding Corp.'s No. 7 Wilkerson was dry and abandoned at 850 feet. Its No. 8 Wilkerson was dry and abandoned at 1,289 feet. Culbertson Co.'s No. 65 Waggoner was dry and abandoned at 1,604 feet. John O'Neil's No. 6 Roberts was dry and abandoned at 2,000 feet. Sheldon & Lowry's No. 1 Gibson was dry and abandoned at 1,962 feet. D. Wilson's No. 1 Griffin was dry and abandoned at 1,851 feet.

Wilbarger County

Empire Gas & Fuel Co.'s No. 19 Waggoner was shot with 20 quarts at 1,820-34 feet, was drilled to a total depth of 1,846 feet and had an initial production of 64 bbls. Its No. 26 Waggoner had an initial production of 75 bbls. at 2,272-2,314 feet. Fain & McGaha's No. 22 Waggoner had an initial production of 70 bbls. at 2,392-2,402 feet. Their No. 5 Waggoner was shot with 30 quarts at 2,396-2,403 feet and had an initial production of 55 bbls. Hammond's No. 1 Dill was dry and abandoned at 2,242

(Continued on Page 173)

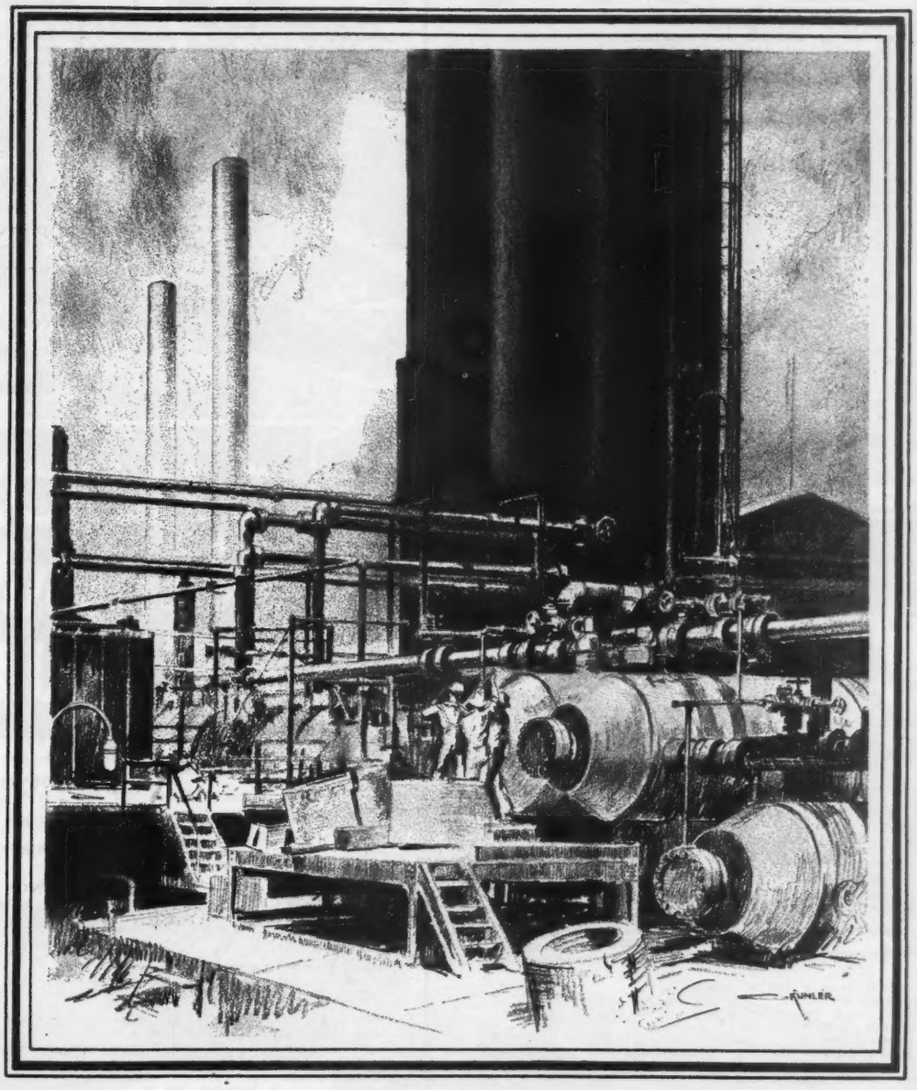
WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending December 23

CARSON COUNTY

Company, well, farm, name, section and block—	Remarks—
Continental Oil Co.'s No. 2 Block, 990 ft. from N. 330 ft. from E, SE, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 1,315 ft.
Danciger O. & R. Co.'s No. 1 Block, 330 ft. from N and E lines, Sec. 112, Blk. 4, I.&G.N. Sur.	S.D. 2,851 ft.
Delmar Oil Co.'s No. 5 Noel, 330 ft. S and W, NE cor. W½ SE. Sec. 198, Blk. 3, I.&G.N. Sur.	S.G. 3,000-10 ft; S.D. 3,131 ft.
Empire G. & F. Co.'s No. 1 Fields, 1,650 ft. from N and E, Sec. 13, Blk. 7, I.&G.N. Sur.	Fishing 612 ft
Empire G. & F. Co.'s No. 2 Deahl, 660 ft. N and E, SW, Sec. 3, Blk. 5, B.&B. Sur.	Drlg. 2,500 ft.
Empire G. & F. Co.'s No. 1 Thorp, C NW, Sec. 26, Blk. T, A.B.&M. Sur.	Spudding.
Ham Oil Co.'s No. 1 Cooper, 330 ft. from S and W, E½ NE, Sec. 5, Blk. 9, H.&G.N.R.R. Sur.	Set 8-in. csg. 2,598 ft.
Herragan Oil Co.'s No. 1-A McConnell, 330 ft. from N and W, W½ SW, Sec. 187, Blk. 3, I.&G.N.R.R. Sur.	Drlg. 2,008 ft.
S. D. McElroy's No. 1 Block, 330 ft. from N and E. NE NW, Sec. 112, Blk. 4, I.&G.N.R.R. Sur.	Set 8-in. csg. 2,420 ft.
McMan O. & G. Co.'s No. 1 McConnell, 330 ft. from N and E, E½ SW, Sec. 187, Blk. 3, I.&G.N.R.R. Sur.	Drlg. 2,590 ft.
Osborne et als' No. 3 Percival, 330 ft. N and W, SE cor. E½ NE, Sec. 199, Blk. 3, I.&G.N.R.R. Sur.	Location.
Pansota Oil Co.'s No. 1 Block, 330 ft. S and W, NE cor. SW, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	Rig.
Phillips Pet. Co.'s No. 1 Garner, 330 ft. N and E, SW cor. SW, Sec. 114, Blk. 4, I.&G.N. Sur.	S.D. 2,940 ft.
Prairie O. & G. Co.'s No. 2 Nail, 330 ft. from N and W lines, N½ E½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	10,000,000 ft. gas 3,830-3,985 ft; S.D. 3,112 ft.
Red River Gas Co.'s No. 3 Lee Bivins-A, C SE SE. Sec. 43, Blk. M-20, G.&M.R.R. Sur.	S.D. 620 ft.
Ryan Cons. Oil Co.'s No. 7 Block, 330 ft. N, 990 ft. W, SE cor. NE, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 670 ft.
Shell Pet. Corp.'s No. 1 Percival, 330 ft. from N and E, SE, Sec. 199, Blk. 3, I.&G.N. Sur.	Rig.
Skelly Oil Co.'s No. 19 Schafer, 330 ft. N, 990 ft. E, SW cor. NE, Sec. 198, Blk. 3, I.&G.N. Sur.	6,000,000 ft. gas 2,895-2,970 ft; S. D. 3,100 ft.
Skelly Oil Co.'s No. 20 Schafer, 330 ft. N, 990 ft. W, SE cor. N½, Sec. 198, Blk. 3, I.&G.N. Sur.	S.D. 3,090 ft.
The Texas Co.'s No. 3 Noel, 330 ft. N and W, SE cor. NW, Sec. 187, Blk. 3, I.&G.N.R.R. Sur.	Drlg. 1,255 ft.

(Continued on Page 86)



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WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 84)

The Texas Co.'s No. 3 Quinn, 330 ft. N, 990 ft. E, SW cor. E½, Sec. 7, Blk. 9, I.&G.N.R.R. Sur. ... Drlg. 1,135 ft.

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 M. Siemmons, SW cor., Sec. 73, Blk. M-17, B.S.&F. Sur. ... Rig blown down.

Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur. ... S.D. 510 ft. for csg.

CHILDRESS COUNTY

Continental Oil Co. and Sun Oil Co.'s No. 1 Johnson, 660 ft. from NE of Sec., 550, Blk. H, W.&N.W. Sur. Location.

C. L. Sloane et als' No. 1 B. P. Smith, Sur. 49, F. P. Knott lands ... S.D. 4,675 ft.

COCHRAN COUNTY

Westbrook et als' No. 1 Slaughter, 400 ft. from S and E, Labour 67, League 118, Knox Co. School lands ... Set 8-in. csg. 2,771 ft.

DONLEY COUNTY

Blue Bonnett Oil Co.'s No. 1 Ball, 1,075 ft. from N line, 985 ft. from E line, Sec. 22, Blk. E, D.&P.R.R. Sur. T.D. 3,006 ft; contract depth.

Marine Oil Co.'s No. 1 Sawyer, C SW, Sec. 5, Blk. G, G.C.&S.F. Sur. ... S.D. 3,540 ft.

Southland Oil Co.'s No. 1 Lewis, C SE 40 ac., Sec. 3, Blk. 29, H.&G.N.R.R. Sur. ... T.D. 3,005 ft; temp. abd.

GRAY COUNTY

Adams Oil Co.'s No. 4 Morse, 330 ft. S and W, NE cor. Sec. 3, Blk. 26, H.&G.N.R.R. Sur. ... S.D. 2,495 ft; S.O.

Alexander and Shell Pet. Corp.'s No. 1 Harrah-McKinney, 330 ft. S and W, NE cor. E½ SE, Sec. 163, Blk. 3, I.&G.N.R.R. Sur. ... S.G. 3,065 ft; T.D. 3,160 ft; 1,000 ft. oil in hole; 5,000,000 ft gas; T.P. 3,135 ft.

British-American Oil Co.'s No. 2 Purviance, 330 ft. N and E, SW cor. E 160 ac., Sec. 61, Blk. B-2, H.&G.N.R.R. Sur. ... Location.

Camel Oil Co.'s No. 2-B Harrah, 330 f.. from N and E, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. ... Location.

Champlin Ref. and Danciger's No. 3 Cook-Faulkner, 330 ft. S and E, NW cor. W 120 ac. of E 200 ac., Sec. 30, Blk. B-2, H.&G.N.R.R. Sur. ... T.D. 2,670 ft; running 8¼-in. csg

Clayton-Key Oil Co.'s No. 1 Key, 330 ft. from S and W of E 42 ac. of N 84 ac. of S 168 ac., Sec. 1, B.&B. Sur. ... T.D. 1,968 ft; cmtd. 8¼-in. csg.

Constantine et als' No. 1 Crews, 330 ft. S and W, NE cor. SW, Sec. 20, Blk. 30, H.&G.N.R.R. Sur. ... S.G. 2,190 ft; fishing 2,325 ft.

Danciger et als' No. 11 Jackson, 830 ft. S, 1,320 ft. W. NE cor. NW, Sec. 88, Blk. B-2, H.&G.N. Sur. ... T.D. 2,906 ft.

Danciger O. & R. Co.'s No. 5 Morse, 330 ft. N and E, SW SW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ... Drlg. 2,470 ft.

Danciger O. & R. Co.'s No. 1 Shaw, 330 ft. from S, 286 ft. from E of E 39½ ac., NW, Sec. 5, Blk. 1, A.C.H.&B. Sur. ... T.D. 2,588 ft.

Danciger O. & R. Co.'s No. 2 Smith, 330 ft. from S and E, SE, Blk. 3, I.&G.N.R.R. Sur. ... Rigging up.

Danciger O. & R. Co.'s No. 1 Williams, 330 ft. from N, 330 ft. from E, S½ NW ... Estimated 15,000,000 ft. gas 2,610-70 ft; S.D. 2,720 ft.

Dunlop's No. 4 Morse, 330 ft. N and E SW cor. SW, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ... T.D. 2,431 ft.

Follet Pet. Corp.'s No. 1 Hood, 330 ft. from S and W of W 80 ac., SW, Sec. 32, Blk. 3, H.&G.N.R.R. Sur. Cellar.

Sines & Reiger's (formerly Eslick et als') No. 1 Mrs. J. A. Hopkins, NW cor. W 80 ac. of SW, Sec. 84, Blk. B-2, H.&T.C. Sur. ... S.D. 3,206 ft.

Gardner Bros. and Collins' No. 2 Saunders, 955 ft. from S, 330 ft. from E of W 68 ac. E½, J. G. Eustice Sur. Location.

Gulf Prod. Co.'s No. 1 Barrett, 967 f..N and E, SW cor. NE, Sec. 131, Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 2,418 ft.

Gulf Prod. Co.'s No. 3 Worley-A, 330 ft. N, 1,650 ft. W. SE SW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. ... Temp. abd. at 3,163 ft.

Gulf Prod. Co.'s No. 3 Saunders, 330 ft. S, 990 ft. E, NW cor. its 130-ac. lease out of SW cor., Sec. 40, Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 2,880 f..

Guernsey Oil Co.'s No. 1 Vaniman, 330 ft. N and W, E½ NE, Sec. 175, Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 1,150 ft.

Haymer O. & G. Co.'s No. 1 Morse, 330 ft. each way out of SE cor. E½ SE, Sec. 45, Blk. A-9, H.&G.N. Sur. ... Fishing 1,780 ft.

Herragan Oil Co.'s No. 1 Bradford, 330 ft. from N, 990 ft. from E, Sec. 123, Blk. B-2 ... First S.G. 2,475-80 ft; 15,000,000 ft. gas 2,515-40 ft.; S.D. 3,140 ft.; S.O. 2,932-50 ft.

Lyon et als' No. 1-A Morse, 330 ft. from S and W, NW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ... Rig.

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. from N and W cor. SE, Sec. 200, Blk. B-2, H.T.N. Sur. ... Location.

Magnolia Pet. Co.'s No. 1 Wright, 330 ft. S and W lines, S½ SW, Sec. 13, Blk. 3, I.&G.N. Sur. ... 15,000,000 ft. gas 2,707-10 ft; drlg. 2,765 ft.

Oil Operators' No. 1 Bowers, 330 ft. from N, 330 ft. E, Sec. 93, Blk. B-2, H.&G.N. Sur. ... Show oil and gas 2,400-17 ft; S.D. 3,090 ft; S.O. 3,036-55 ft; first gas 2,483 ft; increased at 2,500 ft., 2,544 ft. and 2,950 ft.

Operators Oil Co.'s No. 1 Lovett, 330 ft. from N and W lines, W½ NE, Sec. 57, Blk. B-2, H.&G.N. Sur. ... Gas 2,390 ft; S.O. 2,837-47 ft; T.D. 3,061 ft; P.B. 2,880 ft.; shot 280 qts. from 2,850-80 ft; C.O. and swbng. 70 bbls. daily.

Operators Oil Co.'s No. 5 Cook-Faulkner, 990 ft. N, 330 ft. W, SE W 90 ac., Sec. 30, Blk. B-2, H.&G.N. Sur. ... S.D. 2,748 ft.

Operators Oil Co.'s No. 6 Cook-Faulkner, 330 ft. S and E, NW cor., Sec. 30, Blk. B-2, H.&G.N.R.R. Sur. ... S.G. 2,424 ft. and 2,477 ft; drlg. 2,770 ft; 25,000,000 ft. gas; T.P. 2,748 ft.

Operators Oil Co.'s No. 7 Cook-Faulkner, 330 ft. S, 820 ft. E, NW cor., Sec. 30, Blk. B-2, H.&G.N. Sur. ... S.G. 2,380 ft; drlg. 2,830 ft; 30,000,000 ft. gas 2,691 ft.

Phillips Pet. Co.'s No. 6 Jackson, 330 ft. from N, 990 ft. from E, line, S½ NE, Sec. 88, Blk. B-2, H.&G.N.R.R. Sur. ... T.D. 3,030 ft; fishing pipe.

Queen Oil Co.'s No. 1 Lovett, 330 ft. N and W, W½ NE, Sec. 35, Blk. B-2, H.&G.N.R.R. Sur. ... Spudded and S.D.

Quillian et als' No. 1 Barrett, 330 ft. from N, 330 ft. from E, Sec. 131, Blk. 3, H.&G.N. Sur. ... 20,000,000 ft. gas 2,660-2,705 ft. S.O. 3,100 ft; S.D. 3,350 ft.

Ray et als' No. 1 Noble, 240 ft. from S and 330 ft. from W line, W 80 ac., SW Sec. 10, Blk. A-6, H. &G.N. Sur. ... S.G. 2,708 ft; drlg. 2,882 ft.

Rieger & Steckoll's No. 1 Bohr, 330 ft. from S and E, Sec. 37, Blk. B-3, H.&G.N. Sur. ... Drlg. 2,205 ft.

Robertson & Devore's No. 1 Saunders, 330 ft. from S and W, E½ NW, Sec. 40, Blk. 3, H.&G.N.R.R. Sur. ... Drlg. 600 ft.

Shamrock O. & G. Co.'s No. 3 Saunders, 330 ft. N and E, SW E½ SE, Sec. 4, Blk. 1, A.C.H.&B. Sur. ... S.D. 2,438 ft.

Shamrock O. & G. Co.'s No. 1 Taylor, 330 ft. each way out of NE cor. NW, Sec. 1, Blk 2, H.&G.N. Sur. ... Drlg. 2,325 f..; S.G. 2,245-85 ft.

St. Clair Oil Co.'s No. 1 Dial, 330 ft. S and W, NE cor. SE, Sec. 10, Blk. 25, H.&G.N.R.R. Sur. ... Spudded and S.D.

St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor., Sec. 35, W. R. Lee Sur. ... Spudded and S.D.

Stogner Meaders' No. 1 Taylor, 330 ft. from S and E. SW, Sec. 7, Blk. H, A. H. Wallace Sur. ... 1,000,000 ft. gas 2,490-2,535 ft 2,000,000 ft. gas; T.P. 2,490 ft S.O. 2,920 ft. and 2,992 ft; T.D. 3,112 ft; fishing.

Stover and Shell's No. 1 Saunders, 990 ft. from N, 330 ft. from E, of N 100 ac., of W 149 ac., Sec. 3, B.&B. Sur. ... Location.

The Texas Co.'s No. 1 Bell, 2,310 ft. from N, 2,640 ft. from W, Sec. 183, Blk. B-2, H.&G.N.R.R. Sur. ... Location.

The Texas Co.'s No. 8 Cook-Faulkner, 1,158 ft. N, 1,835 f.. W, SE cor., Sec. 29, Blk. B-2, H.&G.N.R.R. Sur. Drlg. 1,840 ft.

The Texas Co.'s No. 15 Saunders, 330 ft. N and W, SE cor. W½ SE, Sec. 4, Blk. 1, A.C.H.&B. Sur. ... S.D. 2,610 ft.

Travis & Rieger's No. 1 Mackie, 330 ft. from N and E, Sec. 114, Blk. B-2, H.&G.N.R.R. Sur. ... 16,000,000 ft. gas; T.P. 2,685 ft. drlg. 3,040 ft.

Travis et als' No. 1-B Webb, 330 ft. N and W, Sec. 61, Blk. 25, H.&G.N.R.R. Sur. ... Spudding 100 ft.

Tripplehorn Oil Co.'s No. 1 Morse, 330 ft. from S and W, SW SE, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ... Drlg. 350 ft.

Vulcan O. & G. Co.'s No. 1 Carpenter, 330 ft. from N and W of W 80 ac., NW, Sec. 25, Blk. 25, H.&G.N. R.R. Sur. ... Rigging up.

White Eagle O. & R. Co.'s No. 3 Faulkner, 1,158 ft. N, 330 ft. E, SW cor. E 80 ac., Sec. 29, Blk. B-2, H. &G.N.R.R. Sur. ... Drlg. 2,720 ft.

Wright Wilson, rustee's No. 1 Chapman, 175 ft. from S and E lines, N½ NW, Sec. 69, Blk. 25, H.&G.N. Sur. S.O. 2,685 ft; S.D. 2,693 ft.

Wilcox-Pampa Oil Co.'s No. 10 Combs-Worley, 330 ft. S and W, NE cor. SW SW, Sec. 35, Blk. 3, I.&G. N.R.R. Sur. ... T.D. 2,813 ft; 32,000,000 ft. gas and 90 bbls. oil first 7 hrs; T.P. 2,811-13 ft.

HARTLEY COUNTY

Dana O. & G. Co.'s No. 1 Fritz, C NE, Sec. 81, Blk. 44, H.&T.C.R.R Sur. ... Derrick.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood, 320 ft. from N and W lines, League 7, Wilbarger County School lands; elevation 3,363 ft; contract depth 5,000 ft. ... Drlg. 3,910 ft.

HUTCHINSON COUNTY

Alamosa Oil Co.'s No. 4 Sanford, 310 ft. S, 320 ft. W, NE cor. N 160 ac., S 240 ac., Sec. 85, Blk. 46, H.& T.C. Sur. ... S.O. and wtr. 3,010-11 ft; S.D. 3,095 ft.

Danciger O. & R. Co.'s No. 3 Moore, 330 ft. S and E, NW W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ... Drlg. 2,809 ft.

Huey et als' No. 3 Smith et al, 330 ft. from N, 660 ft. from W, S 40 ac. of E 100 ac., SE, Sec. 12, Blk. Y Fishing 2,702 ft.

Midwest Explin. Co.'s No. 3 Moore, 330 ft. N, 330 ft. W, SE NE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ... Drlg. 1,525 ft.

Oates & Jones, No. 1 Jasper, 450 ft. S, 330 ft. W, NE 121-ac. tract, Sec. 23, Blk. M-23, T.C.R.R. Sur. ... Drlg. 1,290 ft.

O. B. Penney's No. 2 Johnson Bros., 330 ft. from S line, 330 ft. from W line, W½ NE, Sec. 35, Blk. Y, A.&B. Sur. ... 31,000,000 ft. gas 1,990 ft; S.D. 3,060 ft; S.O. 3,040-45 ft; I.P. 60 bbls.

Reliance O. & G. Co.'s No. 2 Sanford, 330 ft. S and E, NW W½ of N 80 ac. of S 320 ac., Sec. 83, Blk. 46, H.&T.C. Sur. ... S.D. 2,720 ft.

Smith & McDaniel's No. 1 Pitcher, 330 ft. from S and E, Sec. 19, Blk. M-21, T.C.R.R. Sur. ... Drlg. 2,500 ft.

Spurlock et als' No. 1 Christian, 330 ft. from E, 440 ft. from N, SE SE, Sec. 33, Blk. Y, A.&B. Sur. ... Location.

The Texas Co.'s No. 4 J. L. Moore, 330 ft. S and W, NE cor. SW, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ... Drlg. 1,895 ft.

Travelers Oil Co.'s No. 2 Cockrell, 350 ft. from E and S lines, Sec. 8, Blk. B-3, D.&S.E. Sur. ... 1,000,000 ft. gas 2,610-2,770 ft; T.D. 3,039 ft; T.P. 3,010-39 ft; shot 120 qts. 3,010-39 ft; averaging 120 bbls. per day.

LAMB COUNTY

Graham O. & G. Co. et als' No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ... Fishing 4,000 ft.

LIPSCOMB COUNTY

Brown et als' No. 1 Box T Ranch, SW NE, Sec. 612, H.&T.C. Sur. ... T.D. 3,750 ft.

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ... Drlg. 4,860 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ... Small S.O. 1,133-40 ft; fishing 4,167 ft.

MOORE COUNTY

Amarillo Oil Co.'s No. 1 Perkins-A, 330 ft. each way out of NW cor. NE, Sec. 76, Blk. 3 ... Fishing 3,575 ft.

Canadian River Gas Co.'s No. 1-C Sneed, 660 ft. from N and E, SW, Sec. 46, Blk. 6-T, T.&N.O.R.R. Sur. .. Drlg. 510 ft.

Dana O. & G. Co.'s No. 1 Anthony, C NW, Sec. 260, Blk. 44, H.&T.C.R.R. Sur. ... S.D. 3,312 ft.

Fritch O. & G. Co.'s No. 1 Lee Bivins, C N 40 ac. of N 160 ac., Sec. 4, Geo. Mahan Sur. ... 2,000,000 ft. gas 1,550-65 ft; drlg. 2,590 ft.

Red River Gas Co.'s No. 1 J. M. Shelton, 330 ft. each way from SE cor., Sec. 52, Blk. 3, G.&M. Sur. ... Drlg. 2,175 ft.

MOTLEY COUNTY

Explin. Co.'s No. 5 Matador, C, Sec. 45, Blk. J-B, C, B.&C.N.G.R.R. Sur. ... S.D. 3,915 ft.

Explin. Co.'s No. 6 Matador, 330 ft. from N line, 330 ft. from E line, Sec. 132, Blk. M ... S.D. 4,011 ft.

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ... S.D. 580 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1 Allison "A," 386 ft. from E line, 5,439 ft. from S line, Sec. 1, W. T. Palmer Sur. 11,000,000 ft. gas 2,295-2,375 ft; drlg. 2,610 ft.

RANDALL COUNTY

W. A. Patterson's No. 1 Palo Duro, Sec. 60, Blk. K-14 .. S.D. 1,250 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. A-5 ... T.D. 5,992 ft; shot 10 qts. 5,270-93 ft; S.O. 5,288 ft; C.O.

WHEELER COUNTY

Burnett & Hosher's No. 1 Hosher, 330 ft. N and W, SW SE, Sec. 63, Blk. 17, H.&G.N.R.R. Sur. ... Location.

Dunaway Bros.' No. 1 Worley, 330 ft. S and W, NE cor. NW, Sec. 39, Blk. 24, H.&G.N.R.R. Sur. ... Location.

Holmes et als' No. 2 Close, 990 ft. N and 400 ft. W, SE SE SE, Sec. 82, Blk. 23, H.&G.N.R.R. Sur. ... Location.

Lela O. & G. Co.'s No. 1 Williams & Laycock, 330 ft. from S. 209 ft. from W, W½ NW, Sec. 20, Blk. A-8, H.&G.N. Sur. ... Fishing 1,755 ft.

Lone Star Gas Co.'s No. 1 Simms, C SW NE, Sec. 103, Blk. 23, H.&G.N.R.R. Sur. ... Drlg. 550 ft.

Martin & Debous' No. 2 Close, C NE NE, Sec. 83, Blk. 23, H.&G.N.R.R. Sur. ... Drlg. 1,500 ft; first gas 1,500 ft.

Murchison & Fain's No. 1 Cooper, C SW NW, Sec. 80, Blk. 23, H.&G.N.R.R. Sur. ... Drlg. 1,750 ft.

Prince & Adam's No. 1 Buchanan, C NW NE, Sec. 89, Blk. 17, H.&G.N. Sur. ... Location.

Upham Gas Co.'s No. 5 Close-Gooch, 30 ft. N, 660 ft. E, SW cor. SW NW, Sec. 81, Blk. 23, H.&G.N.R. R. Sur. ... Location.

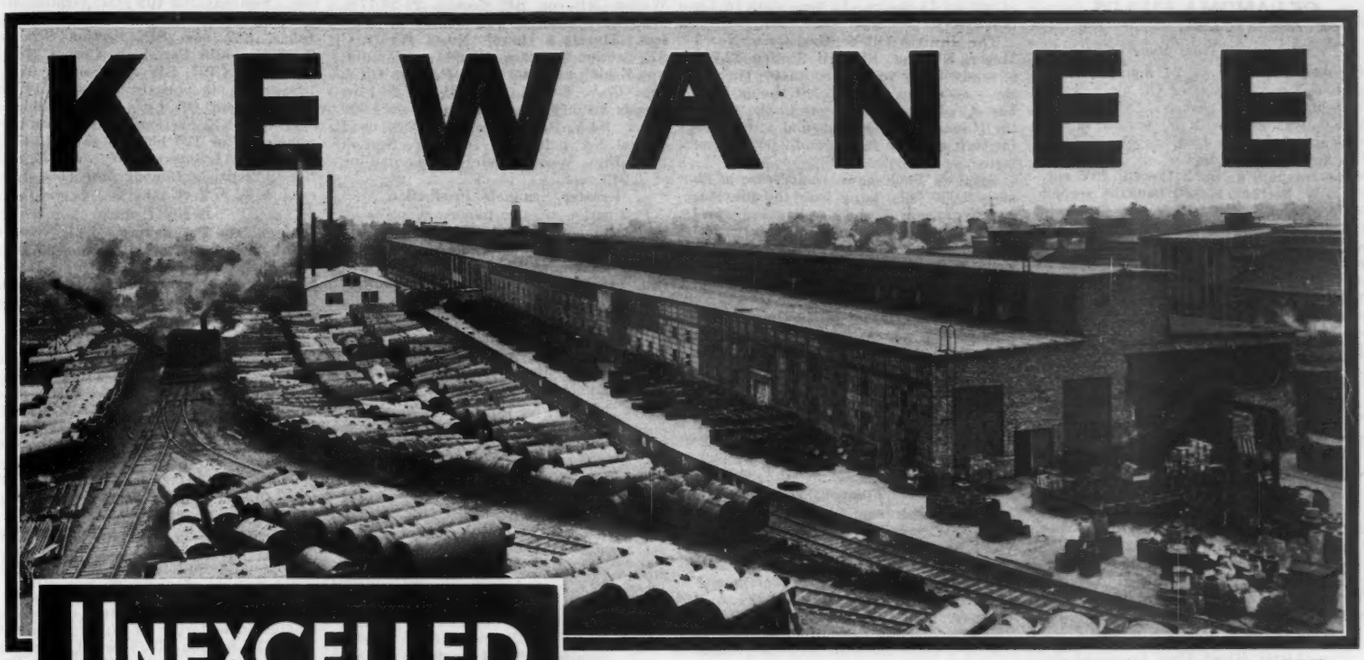
Upham's No. 1 Cuddleback, C SE SE, Sec. 2, Blk. 24, H.&G.N.R.R. Sur. ... Drlg. 1,915 ft; estimated 15,000,000 ft gas 1,810-1,915 ft.

Vaughn et als' No. 3 Ackley, 330 ft. from N, 330 ft. from W, Sec. 4, Blk. 27, H.&G.N. Sur. ... T.D. 1,840 ft; 5,000,000 ft. gas 1,660-1,770 ft; junked hole; skidding rig 60 ft. south; drlg. 830 ft.

Wischkamper et als' No. 2 Curry, C NW SE, Sec. 53, Blk. 23, H.&G.N. Sur. ... Location.

Wischkamper et als' No. 2 Johnson, 200 ft. S and W, NE cor. SE, Sec. 50, Blk. 17, H.&G.N.R.R. Sur. ... Location.

KEWANEE



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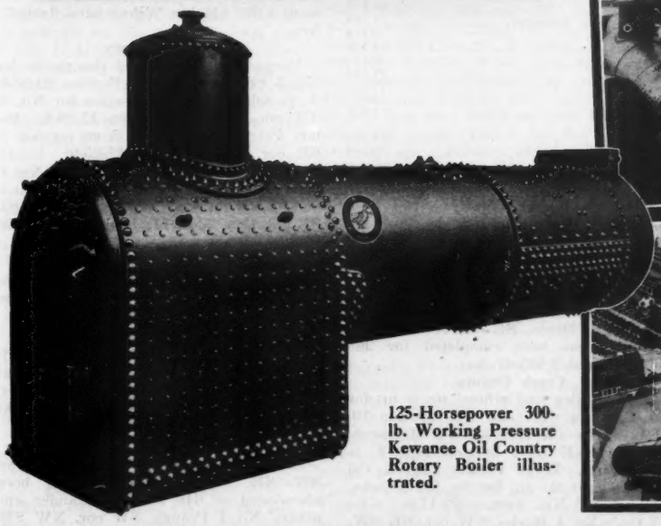

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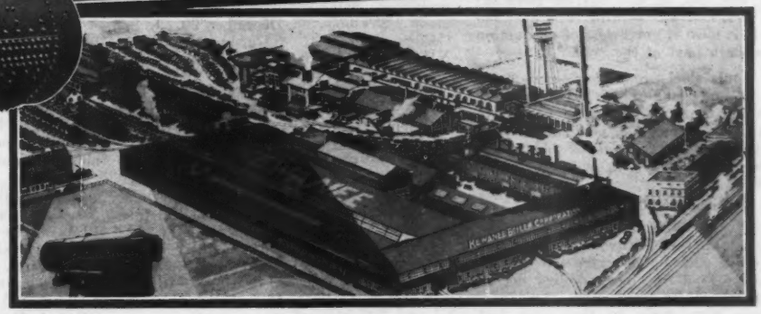

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OKLAHOMA FIELDS

(Continued from Page 58)

swabbed 750 bbls. in 24 hours after a shot of 5 quarts. Carter Oil Co.'s No. 3 Wrightsman, SW cor. NE NE Section 19-9-6, was shot with 50 quarts in the Wilcox sand at a total depth of 4,203 feet and had 1,800 feet of oil in the hole. Same company's No. 2 Powell, SW cor. SE SW Section 17-9-6, had the second Wilcox sand at 4,404-15 feet, with a hole full of water. Gypsy Oil Co.'s No. 1 Taylor, SE cor. NE SW Section 19-9-6, was rigging up standard tools at 4,068 feet. Shell Petroleum Corp.'s No. 3 Hopper, NE cor. SE NE Section 19-9-6, was shot with 20 quarts. It was cleaning out and swabbed 120 bbls. in five hours. The Texas Company's No. 5 Magruder, SE cor. NW NW Section 19-9-6, had 1,200 feet of oil in the hole from the Wilcox sand at 4,190-4,210 feet. Same company's No. 16, Section 19-9-6, swabbed 40 bbls. after being plugged back to 4,240 feet. from a total depth of 4,245 feet, where it showed water.

Earlsboro Pool, in spite of the new wells in the townsite, has declined almost 2,000 bbls. The Healdton Oil & Gas Co.'s No. 1 Reed on Block 1, Earlsboro townsite, in Section 8-9-5, made 1,170 bbls. from the Wilcox sand at 4,335-50 feet. On the townsite approximately 20 wells are drilling.

New Wells in East Little River

East Little River Pool increased its production about 500 bbls. on account of new wells being completed in that area. Magnolia Petroleum Co.'s No. 2 Brome, NW cor. NE NE Section 8-7-7, made 2,095 bbls. from the Wilcox sand. Superior Oil Corp.'s No. 2 Reed, NW cor. Section 9-7-7, had Wilcox sand at 4,312-17 feet, which was dry. In the older areas of the Little River Pool, Barnsdall Oil Co.'s No. 1 Factor, NW cor. SE Section 13-7-6, had a showing of oil and gas in the Wilcox sand at 4,120-25 feet. Reiter-Foster Oil Corp.'s No. 4 Bunyard, NE cor. NW SW Section 14-7-6, had water in the Cromwell sand at 3,233 feet, and was shut down. The Texas Company's No. 2 Dindy, NW cor. NE SW Section 24-7-6, found water in the Cromwell sand at a total depth of 3,298 feet, and will be plugged back to 3,100 feet.

The Maud Pool is maintaining its production steadily. No new wells were completed in the pool. Twin State Oil Co.'s No. 1 Ray, NW cor. SW SW Section 3-8-4, has top of the Sylvan shale at 4,250 feet, and was drilling in it at 4,295 feet. It is located northwest of production in the main part of the pool.

St. Louis Pool production shows a decline around 4,000 bbls. daily in spite of the fact that two producing wells were added to the area. The pool had a daily average production of 50,655 bbls. from 443 wells for the week ending December 18.

Extension of St. Louis Pool

Wofford Drilling Co.'s No. 1 McGee, a wildcat on the northwest edge of production of the north extension to the St. Louis Pool, has been drilled deeper and increased its production. Two new locations were made in that area last week. The Wofford Drilling Co.'s No. 1 McGee, NE cor. NW SE Section 4-7-4, had been making around 1,700 bbls. daily from a total depth of 3,875 feet in Hunton lime. It was deepened to 3,885 feet and made as high as 2,400 bbls. in 24 hours. It made 2,148 bbls. on December 20. Mid-Continent Petroleum Corp. has made a location for its No. 1 McGee, SW cor. NW Section 3-7-4, and the Pure Oil Co. has staked a location for its No. 2 McGee, NE cor. SE Section 4-7-4. Independent Oil & Gas Co.'s No. 1 Asher, NE cor. Section 3-7-4, flowed 231 bbls. from the Hunton lime at a total depth of 3,725 feet for the 24 hours ending December 20. It has been shut down for orders.

Twin State Oil Co. has made a location for its No. 1 Brown, SW cor. NW NE Section 22-7-4, Magnolia Petroleum Corp.'s No. 1 D. Lynn, NE cor. NW NE Section 21-7-4, had the Viola lime at 4,000-04 feet, where it flowed 1,038 bbls. of oil in 14 hours. It was shut in for tankage.

The Prairie Oil & Gas Co.'s No. 1 Meyer, NW cor. SW SE Section 32-7-4, a semiwildcat in the southern part of the west extension of the St. Louis Pool, has showing of oil and gas in the top of the Hunton at 4,044 feet, and after drilling in it to 4,065 feet, found 2,000 feet of water in the hole.

Sasakwa Pool shows an increase of almost 2,000 bbls. daily over the previous week's gauges. No new wells were added to the pool. Operators apparently prorate for one week and then produce the wells open the next week. Production in this area has been up one week and down the next.

The Wilcox sand production in the Allen Field was extended to the east when the Louisiana Oil & Refining Co.'s No. 6 Reed, C NW NE NE Section 18-5-8, found oil in the Wilcox sand at 4,108-21 feet. It is an old well drilled deeper. Oil rose 100 feet in the hole in a short time. If this well makes a commercial producer it will result in a new drilling campaign in the Allen Pool.

In the Palacine Area

In the Palacine Field in Stephens County, Wirt Franklin Petroleum Corp.'s No. 1 Spain, SW cor. SE NW Section 9-2s-6w, the discovery oil well, was swabbing water to test a shut-off on the casing after plugging back to 3,234 feet. Same company's No. 2 Brooke, SE cor. NE Section 8-2s-6w, was fishing for drill pipe at a total depth of 2,168 feet. Magnolia Petroleum Corp.'s No. 2 Andrea, NE cor. SE NE Section 8-2s-6w, was drilling ahead at 3,172 feet. It had cored a sandy shale at 3,159-69 feet. It is expected to be the second well completed in the new field. Ven-Mex Oil Co.'s No. 1 Andrea, SW cor. NE SE Section 5-2s-6w, was drilling in hard sand at 3,035 feet with nothing showing.

Shasta Oil Co.'s No. 1 Smith, NE cor. Section 31-1s-9w, Cotton County, encountered an oil sand at 2,228-32 feet, and was preparing to test the showing.

Magnolia Petroleum Corp.'s No. 1 Hightower, SW cor. NE Section 30-1s-3w, Carter County, which was drilled to the new pay horizon in that area is still averaging 920 bbls. daily.

Water Showing in Marshall Pool

The Marshall Pool in Logan County is showing water in the wells in the south extension. A new well has been completed. Shell Petroleum Corp.'s No. 3 Story, SW cor. SE SW Section 30-19-4w, made 1,019 bbls. from the Wilcox sand at 5,965-94 feet. It will be pinched for proration. Same company's No. 1 Story, made 1,254 bbls. on December 20. J. S. Cosden, Inc's. No. 4 Gardner, SE cor. NW Section 31-19-4w, in the south extension, made 560 bbls. on December 20, as compared to 611 bbls. the day before, and was cutting 10 per cent. It is producing from the Wilcox sand at 6,002-30 feet. The south offset owned by the Skelly Oil Co. and Independent Oil & Gas Co., the No. 1 Elrod, NE cor. SW Section 31-19-4w, had Wilcox sand at 6,055-75 feet. It flowed 281 bbls. on the gauge of December 20. It has been drilled a few feet each day with no increase in its production. Wentz Oil Corp.'s No. 2 Williams, NW cor. NE Section 31-19-4w, a recent completion, flowed 400 bbls. of oil and 300 bbls. of water on the gauge of December 20.

Leasing in Western Oklahoma

In the northwestern part of Oklahoma, Major, Blaine, Dewey and Kingfisher Counties are getting one of the biggest leasing campaigns in oil history. It is reported that the west half of Major County has all been leased. At the present time four core drill machines are running in Major County. Shortly after the first of the year the Indian Territory Illuminating Oil Co. and Continental Oil Co. may start a wildcat test on a block owned jointly in Township 22-14w, Major County. The only test in that area that has had a showing of oil and gas is the Sinclair Oil & Gas Co.'s No. 1 Stewart, C NE SW, Section 33-27-16w, Woods County. It was drilling at 5,835 feet. Same company's No. 1 Howell, C SW SW, Section 14-26-24w, Harper County, was still fishing for drill pipe at 6,161 feet. Prairie Oil & Gas Co.'s No. 1 Wilber, NE cor. SE, Section 23-23-17w, Woodward County, was drilling at 5,916 feet. Harris & Haun's No. 1 Wyatt, C SE, Section 9-23-20w, Woodward County, was fishing at 4,969 feet. Peerless Oil & Gas Co.'s No. 1 Crowell, 14-28-14w, Woods County, was shut down at 1,500 feet. Bu-Vi-Bar Petroleum Corp. and others' No. 1 fee, SE cor. SW, Section 10-25-15w, Woods County, was drilling at 6,045 feet.

Greater Seminole Production

Production of the important pools in the Greater Seminole area averaged 315,376 bbls. from 2,500 wells for the week ending December 18. Production of the first 11 pools in the list which comprise the Seminole area was 229,095 bbls. from 1,762 wells. The total production of the entire area shows a decline of 5,000 bbls. from the previous week. The daily average gauges for the week ending December 18 were as follows:

Pool—	Wells	Bbls.
Little River	346	43,128
East Little River	53	25,383
Carr City	57	8,516
Maud	137	8,022
Mission	110	15,835
Bowlegs	294	23,756
Earlsboro	296	34,932
East Earlsboro	82	31,776
Seminole	273	24,570
East Seminole	29	4,672
Searight	85	8,505
Allen	237	20,107
Asher	26	3,591
St. Louis	443	50,655
Sasakwa	32	11,928
Total	2,500	315,376

Seminole Pipe Line Runs

The daily average pipe line runs show a decline for the week ending December 18. The total runs for the Seminole area were 229,168 bbls. The runs by companies were as follows:

Company—	Bbls.
Barnsdall	2,814
Champlin	4,117
Continental	520
Consolidated	789
Cosden	9,359
Empire	3,812
Gulf	34,879
Magnolia	10,265
Oklahoma	41,329
Prairie	36,233
Producers & Refiners	1,282
Pure	3,459
Shaffer	4,910
Shell	6,110
Sinclair	25,961
Texas	15,541
Tidal	16,000
White Oak	1,844
Total	219,224
Tank cars	9,944
Grand total	229,168

Carter County

Magnolia Petroleum Co. has the rig up for No. 4 Denny, SW cor. NE NE, Section 30-1s-3w. No. 2 W. W. Martin, NE cor. NW SE, Section 23-1s-3w, has been completed for 23 bbls. in sands 2,312 feet to 2,505 feet. Ven Mex Oil Co.'s No. 1 Dixon, SE cor. NW, Section 20-1s-3w, has been completed for 268 bbls. in sand 2,835-47 feet.

Creek County

A. A. Bailey and others' rig is up for No. 1 Foster, NW cor. NE, Section 19-19-9. Jackson & Wise's No. 1 McIntosh, NW cor. NE NW, Section 28-18-9, is rigging up. Texas Pacific Coal & Oil Co. has built the rig for No. 9 Harjoche, NE cor. SE NE, Section 21-17-9. Gled Oil Co.'s No. 1 Reabe, NW cor. SE SW, Section 25-19-8, has been completed for 8 bbls. in sand 2,205-27 feet. William Sherry and others' No. 2 Narharky, NE cor. NW, Section 24-19-9, is dry and abandoned at 2,770 feet. Jackson & Wise's No. 1 Grayson, NE cor. SE SE, Section 20-18-9, made 280 bbls. in Dutcher sand 2,849-69 feet. Texas Pacific Coal & Oil Co.'s No. 1 Harjoche, SE cor. NE, Section 21-17-9, made a 10-bbl. well in sand 2,904-24 feet. H. L. Skelly and C. O. Buckles' No. 1 Goodman, SW cor., Section 23-17-9, has been abandoned at 3,242 feet. The Texas Company's No. 1 Sewell, NW cor. SW NW, Section 26-16-10, is a dry hole at 3,142 feet. William Sherry and F. B. Murta's No. 1 Clinton, SW cor. NW, Section 12-15-9, is dry and abandoned at 3,415 feet.

Cotton County

Shasta Oil Co.'s No. 3 Burneaugh, SE cor. NW NW SE, Section 2-2s-10w, is drilling at 50 feet. No. 12 Slogan, NE cor., Section 2-2s-10w, is rigging up. Thomas Medlin made location for No. 1 Johns, SW cor. SE, Section 8-2s-9w. Wirt Franklin Petroleum Corp.'s No. 6 Chambers, CWL SW SE, Section 35-1s-10w, made 30 bbls. from sand 2,149-66 feet. Shasta Oil Co.'s No. 10 Slogan, CNL NW NE, Section 2-2s-10w, has been completed for 125 bbls. in sand 2,147-73 feet. No. 11 Slogan, NW cor. NE, Section 2-2s-10, is flowing 200 bbls. from sand 2,136-57 feet.

Grady County

Magnolia Petroleum Co.'s No. 10 Smith, SE cor. SW NE, Section 35-5-8w, is rigging up. No. 4 Dryden, NE cor. NW SE, Section 35-5-8w, has been completed for 7,000,000 feet of gas in sands 2,164-2,360 feet.

Hughes County

Iglehart and others' rig is up for No. 1 Barnett, C NE SW, Section 28-9-10. Independent Oil & Gas Co. made location for No. 1 Coker, C NW SW, Section 12-7-8. Superior Oil Corp. and Amerada Petroleum Corp.'s No. 2 Jimboy, NW cor. SE SE, Section 4-8-9, has been completed for 1,500,000 feet of gas and 13 bbls. oil in Cromwell sand 3,350-75 feet.

Garfield County

Shell Petroleum Corp. and others made location for No. 1 Loomis, C NW NW, Section 32-23-4w.

Grant County

Continental Oil Co. and others are moving in material for No. 4 Frantz, C NW SE, Section 35-28-3w. Continental Oil Co.'s No. 2 Webb, CWL NW NE, Section 2-27-3w, has been completed for 9,500,000 feet of gas in sand 4,115-4,246 feet.

Kay County

De Camp and others' No. 1 Warren, C SW NW, Section 30-28-1, has been abandoned at 1,200 feet.

Logan County

J. S. Cosden, Inc.'s No. 3 Gardner, SE cor. NE NW, Section 31-19-4w, Roxana Pool, has been completed for 2,355 bbls. in Wilcox sand 5,945-90 feet. No. 4 Gardner, SE cor. NW, Section 31-19-4w, made 1,628 bbls. in Wilcox sand 6,002-31 feet.

Osage County

Vacuum Oil Co. moved the rig in for No. 3 SE cor. NE NE, Section 22-26-6. A. G. Oliphant made location for No. 1, SW cor. SE NW, Section 12-26-8. Peters Petroleum Co.'s rig is up for No. 1, SE cor. NW, Section 27-25-9. Continental Oil Co. staked location for No. 1, NW cor. SE SE, Section 24-24-5. Brandstetter and others' No. 7, NW cor. SE SE, Section 22-22-11, is drilling at 350 feet.

Pawnee County

Thompson & Black moved a machine in for No. 1 Bayless, NE cor., Section 30-20-9.

Jefferson County

O. V. Beck's No. 6 Seay, NW cor. NE SE SW, Section 34-6s-5w, is drilling at 608 feet. Bridwell Oil Co.'s No. 2 Seay, SE cor. SW NW, Section 29-6s-5w, has been abandoned at 2,086 feet.

Kiowa County

Connor & Son's No. 3 Geis, SE cor. SW NE, Section 25-7-16w, has been abandoned at 648 feet. Alexander and others' No. 1 Prough, SW cor. NW SW SW, Section 17-6-16w, has been abandoned at 468 feet.

Marshall County

Burroughs & Dennis' No. 1 McComas, SW cor. NW SW, Section 13-5s-5, is drilling at 150 feet. C. B. Goddard Oil Co.'s No. 3 McComas, NW cor. SW SW SW, Section 13-5s-5, is drilling at 260 feet. No. 1 Marshall, NW cor. NE NE SW, Section 30-5s-6, is a machine. Magnolia Petroleum Co. moved a machine in for No. 1 Coatesworth, SW cor. SE SE SE, Section 30-5s-5. Cox & Hammon's No. 1 McComas, SW cor. NW SW SW, Section 13-5s-5, made 60 bbls. from sands 543-46 feet and 563-73 feet. Bilbo Oil Trust Co.'s No. 2 Taliaferro, SE cor. SW NE NE, Section 14-5s-5, has been abandoned at 729 feet. No. 1 Hull, SE cor. NW NW, Section 24-5s-5, made 600 bbls. in sands 570-72 feet and 587-600 feet. Carter Oil Co.'s No. 2 Davidson, NE cor. SW NW NW, Section 30-5s-6,

has been completed for 77 bbls. in sand 596-616 feet.

Muskogee County

C. F. Ray and others' No. 1 Montgomery, SE cor., Section 15-13-18, is a machine on the location. John Aggas' No. 2 Wheat, NE cor. SE SW, Section 28-16-15, made 65 bbls. in sand 1,428-36 feet. Arthur Oil Co.'s No. 1-A Dean, NE cor. SE NE NW, Section 34-15-18, has been completed for 250,000 feet of gas in sand 827-36 feet. C. F. Davis and others' No. 1 Agnew, NW cor. SW SE, Section 12-13-18, is dry and abandoned at 985 feet. E. Mills and others' No. 2 Foreman, NW cor. SE SE, Section 15-13-18, made 750,000 feet of gas in sand 644-67 feet. W. F. Sessions and others' No. 1 Pickard, SE cor. SW, Section 29-13-19, is dry and abandoned at 1,175 feet.

Okfuskee County

The Prairie Oil & Gas Co.'s No. 1 Fier, SE cor. SW SW, Section 16-10-11, has been abandoned at 2,920 feet. Holm & Jarvis' No. 2 Buckley, NW cor. NE NW, Section 21-10-11, made 75 bbls. in sand 2,591-98 feet.

Oklahoma County

Cromwell, Franklin and others made location for No. 14 Trosper Park, SE cor. NE, Section 14-11-3w, Oklahoma City Pool. Indian Territory Illuminating Oil Co. and others made location for No. 1 Mary Unsell, SE cor. NE, Section 23-11-3w. Location was also made for No. 1 Werner Farley, NE cor. SE, Section 23-11-3w. Coline Oil Co. has the rig up for No. 9 Olds, SW cor. NW, Section 24-11-3w. Indian Territory Illuminating Oil Co. made location for No. 1 George, SW cor., Section 7-11-2w. The location has been made for No. 6 N. Emmerson, SW cor. SE SW, Section 30-11-2w. No. 7 N. Emmerson is a location in the SE cor. SW SW, Section 30-11-2w. Sinclair Oil & Gas Co. made location for No. 2 Vencl, NE cor. NW SE, Section 31-11-2w. T. B. Slick and others made location for No. 3 Hoopes, SE cor. SW NE, Section 31-11-2w. Location was staked for No. 4 Hoopes, NE cor. SW NE, Section 31-11-2w. Skelly Oil Co. made location for No. 4 Hoopes, SE cor. NW NE, Section 31-11-2w. Indian Territory Illuminating Oil Co. and others made location for No. 7 Jones,, NE cor. NW NW, Section 31-11-2w. Location was made for No. 8 Jones, NW cor. NE NW, Section 31-11-2w.

Okmulgee County

Campbell & Cochran's No. 1 Depriest, NE cor., Section 19-15-13, is dry and abandoned at 2,778 feet. T. E. Wheeler & Evans' No. 2 Scott, SE cor. NE SW, Section 34-14-11, has been abandoned at 3,143 feet. C. V. Prince and others' No. 7 Adams, SE cor. NW NE, Section 12-14-14, made a 6-bbl. well in sand at 1,418 feet. J. E. Hennessey's No. 1-A Fee, NE cor. SE SW, Section 9-13-14, has been completed for 15 bbls. in sand 1,781-98 feet.

Payne County

Shaffer Oil & Refining Co. has the rig up for No. 7 Sharrum, NW cor. SW NW, Section 5-17-4. Magnolia Petroleum Co. made location for No. 5 Payne, SE cor. NE NE, Section 6-17-4.

Pottawatomie County

Big Four Development Co. has the cellar dug for No. 1 Earlsboro Townsite, Lot 21, Block 35, NW cor. SW, Section 8-9-5. Zack Neal and others' No. 1 Townsite, Lot 6, Block 20, C SW NW, Section 8-9-5, is a rig under construction. Louis Sykes' No. 1 Townsite, Lot 3, Block 12, NW cor. SE NW, Section 8-9-5, is a rig. Continental Oil Co. and Independent Oil & Gas Co. made location for No. 2 Brandenburg, SW cor. SE SE, Section 34-8-4. Independent Oil & Gas Co. and others made location for No. 1 Larsh, SE cor. SW SW, Section 2-7-4. Independent Oil & Gas Co. and Mid-Kansas Oil Co. made location for No. 3 Weldfelt, NE cor. SW NW, Section 2-7-4, North St. Louis Pool. Sinclair Oil & Gas Co. made location for No. 1 Morgan, NE cor. SW, Section 4-7-4. Gypsy Oil Co. has the cellar dug for No. 1 Rose, SW cor. SE NE, Section 4-7-4. Magnolia Petroleum Co.'s No. 1 Wyatt, SE cor. SW NE, Section 4-7-4 is a location. No. 2 Wyatt, SW cor. NE, Section 4-7-4, is a location. Pure Oil Co. made location for No. 1 Duvall, NW cor. NE SE, Section 4-7-4. Atlantic Oil Producing Co. made location for No. 1 McGee, NW cor. SE, Section 4-7-4. Sinclair Oil & Gas Co.'s No. 4 Brandenburg, NW cor. SW SW, Section 7-7-5, is a rig on the ground.

Indian Territory Illuminating Oil Co.'s No. 1 Brandenburg, SE cor. SW SW, Section 35-8-4, made 1,210 bbls. from Hunton lime 3,748-59 feet. Continental Oil Co.'s No. 1 Motely, SW cor. SE SE, Section 10-7-3, made 310 bbls. from Hunton lime 4,350-79 feet. Independent Oil & Gas Co. and Mid-Kansas Oil Co.'s No. 2 Weldfelt, SE cor. NW NW, Section 2-7-4, made 209 bbls. from Hunton lime 3,613-33 feet. Indian Territory Illuminating Oil Co.'s No. 3 Weldfelt, SW cor. NE NW, Section 2-7-4, flowed 694 bbls. from Hunton lime 3,699-3,856 feet. Magnolia Petroleum Co.'s No. 2 Richardson, SW cor., Section 15-7-4, swabbed 375 bbls. from Simpson sand 4,095-99 feet after cleaning out. Independent Oil & Gas Co. and Darby Petroleum Co.'s No. 3 Pappan, SW cor. SE SE, Section 16-7-4, swabbed 185 bbls. from Simpson sand 4,195-4,238 feet. Darby Petroleum Co.'s No. 1 Floyd, NW cor. SW SE, Section 22-7-4, Pearson area, is dry and abandoned at 4,276 feet. Simms Oil Co.'s No. 1 Benham, CEL NW NW, Sectoin 19-6-4, Asher Pool, has been abandoned at 3,849 feet. Obermeyer and others' No. 1 Asher Townsite, C SE, Block 51, NW cor. NE NW, Section 19-6-4, made 380 bbls. from Viola lime 3,666-72 feet.

Sequoyah County

Western Oklahoma Oil & Gas Co.'s No. 1 Barnes, NE cor. SW NE, Section 33-11-25, is drilling at 2,100 feet.

Seminole County

Continental Oil Co. made location for No. 2 Maguire, SE cor., Section 24-9-5, Earlsboro Pool. Amerada Petroleum Corp. and Wilcox Oil & Gas Co. moved the rig in for No. 1 Gates, NE cor., Section 25-9-5. Turman Oil Co. and others' No. 1 Phillips, SW cor. SE, Section 8-9-6, is a cellar. Tidal Oil Co. and Interocean Oil Co.'s No. 4 Lasley, NE cor. SW SE, Section 19-9-6, is a rig going up. Amerada Petroleum Corp. and Dixie Oil Co.'s No. 3 Scott, NW cor., Section 30-9-6, is a rig. Mid-Continent Petroleum Corp. made location for No. 1 Tulsey, SE cor., Section 31-9-6. Sinclair Oil & Gas Co. made location for No. 3 Thompson "B," NE cor. SE SW, Section 18-9-7. Shell Petroleum Corp. made location for No. 1-A Caesar, NW cor. SE NE, Section 11-7-6, Little River Pool. Gypsy Oil Co. has the cellar dug for No. 1 Factor, NW cor., Section 19-7-7, East Little River Pool. The Prairie Oil & Gas Co. and T. B. Slick's No. 4 Tiger, SE cor. NW NE, Section 8-7-7, is a cellar.

Magnolia Petroleum Co.'s No. 4 D. W. Anderson, SW cor. NW SE, Section 18-9-6, East Earlsboro Pool, made 1,147 bbls. from Wilcox sand 4,350-67 feet. No. 3 Panos, NE cor., Section 18-9-6, is dry and abandoned at 4,283 feet. Amerada Petroleum Corp. and Dixie Oil Co.'s No. 1 Scott, NW cor. SW, Section 19-9-6, made 2,760 bbls. from Wilcox sand 4,111-29 feet. McCulloch and others' No. 1 Campbell, NW cor. SE, Section 20-9-6, is dry and abandoned at 4,372 feet. Continental Oil Co. and Shaffer Oil & Gas Co.'s No. 7 Harris, NW cor. NE SW, Section 4-7-7, is dry and abadoned at 4,390 feet. Magnolia Petroleum Co.'s No. 1 Scipio, SW cor. NW NW, Section 4-7-7, East Little River Pool, made 8 bbls. at 4,291 feet after plugging back from 4,305 feet. Amerada Petroleum Corp. and Dixie Oil Co.'s No. 1 Chilcoat, SW cor. SE NW, Section 4-7-7, was completed for 1,440 bbls. in Wilcox sand 4,262-69 feet. The Prairie Oil & Gas Co.'s No. 2 Wisner, NE cor. NW, Section 18-9-6, East Earlsboro Pool, has been abandoned at 4,338 feet. Producers & Refiners Corp.'s No. 2 Jefferson, NW cor. SE, Section 19-9-6, made 3,400 bbls. in Wilcox sand 4,092-4,122 feet. The Prairie Oil & Gas Co. and T. B. Slick's No. 1 Kouri, SE cor., Section 13-7-6, has been completed for 17,600,000 feet of gas in Gilcrease sand 3,118-27 feet.

Stephens County

Magnolia Petroleum Co. made location for No. 6 Worrell, SE cor. SW NW, Section 19-1s-8w. No. 27 Kagay, SW cor. NW SW, Section 34-1s-8w, is a location. Location has been made for No. 11 Burke, SE cor. SW NE, Section 34-1s-8w. Armour and others' No. 5 Spears, NW cor. SW, Section 32-1-8w, is pumping 10 bbls. from sand 2,211-18 feet. Ven Mex Oil Co. and Mid-Continent Oil Co.'s No. 3 Smith, SW cor. SE SW SE, Section 35-1s-8w, has been completed for 18 bbls. in sand 2-219-21 feet. Pace and Texhoma Oil Co.'s No. 5 Houston, SE cor. NW SW, Section 2-2s-8w, made a 17-bbl. pumper in sand 2,168-74 feet. No. 6 Houston, NE cor. SW SW, Section 2-2s-8w, has been abandoned at 2,500 feet. Pelwin Oil Co.'s No. 1 Pielsticker, NW cor. NE SE NE, Section 5-2s-8w, is pumping 50 bbls. from sand 2,217-23 feet. Medlin and others' No. 1 Brown, CSL N half S half NW, Section 18-2s-7w, is dry and abandoned at 1,922 feet.

Tulsa County

L. E. Lockhart and others' No. 1 Childers, CSL SE SW, Section 28-17-14, has been abandoned at 1,370 feet. J. E. Martin and others' No. 1-A Hornacker, NW cor. SW, Section 27-17-13, made 15 bbls. in sand 1,981-96 feet. Keener Oil & Gas Co.'s No. 1-A Unallotted, NW cor. SW NW, Section 9-16-13, is dry and abandoned at 2,116 feet.

Wagoner County

J. Bremer and others' No. 1 Lewis, NW cor. SW NE, Section 31-18-18, is drilling at 110 feet. Keener Oil & Gas Co.'s No. 1 Vermillion, NW cor. NE NW, Section 3-16-19, is drilling at 100 feet.

WEST TEXAS FIELDS

(Continued from Page 83)

82, Block 33, was shot with 122 quarts at 4,200-40 feet and had an initial production of 108 bbls.

Hudspeth County

George Richardson's No. 1 Faxton, located 2,640 feet north and west of Section 9, Block 16, was dry and abandoned at 205 feet.

Howard County

Continental Oil Co.'s No. 8-A Settles, located 550 feet from south and 2,310 feet from east of Section 135, Block 29, topped the pay at 2,931 feet, was drilled to a total depth of 2,939 feet and had an initial production of 35 bbls. Godley Oil Co.'s No. 7 Hooks, located 2,440 feet from north and 1,050 feet west of Section 14, Block 29, had an initial production of 60 bbls. at 1,838-62 feet. Gulf Production Co.'s No. 9 Clay, located 330 feet from north and west of Section 115, Block 29, topped the pay at 1,835 feet, was drilled to a total depth of 1,855 feet, was shot with 80 quarts at 1,836-55 feet and had an initial production of 75 bbls. Humble Oil & Refining Co.'s No. 6 Clay, located 330 feet from south and west of Section 138, Block 29, topped the pay at 1,825 feet, was drilled to a total depth of 1,870 feet, was shot with 40 quarts at 1,827-47 feet and had an initial production of 98 bbls.

Pecos County

Humble Oil & Refining Co.'s No. 12-A Smith, located 1,018 feet from north and 330 feet west of Section 36, Block 194, G.C.&S.F.R.R. Survey, topped the lime at 1,290 feet, topped the pay at 1,365 feet, was drilled to a total depth of 1,453 feet and had an initial production of 800 bbls. Jayhawk Oil Co.'s No. 1 Price, located 1,310 feet from south and west of Section 6, Block 12, topped the salt at 655 feet, topped the lime at 1,325 feet, was drilled to a total depth of 1,735 feet and was dry and abandoned. Landreth-World Oil Co.'s No. 6-B University, located Section 16, Block 18, north offset to No. 2 which is 990 feet from north and east corners, topped the lime at 1,305 feet, topped the pay at 1,610 feet, was drilled to a total depth of 1,655 feet and had an initial production of 577 bbls. Landreth Production Co.'s No. 3-E University, located 1,650 feet from north and 1,165 feet from east of Section 13, Block 18, topped the lime at 1,325 feet, topped the pay at 1,625 feet, was drilled to a total depth of 1,675 feet and had an initial production of 192 bbls. Landreth Production Co.'s No. 2-F University, located Section 31, Block 16, had an initial production of 47 bbls. at 965-76 feet. California Co.'s No. 5 Smith, Lease No. 1, Section 37, Block 194, made 157 bbls. hourly at 1,440-89 feet.

PIPE LINE RUNS

December 4 to December 11
Runs Through Trunk Lines

	Last period
Atlantic P. L. Co., Port Arthur	25,570
Gulf P. L. Co., to coast via Ranger	39,419
Humble P. L. Co., Comyn, Tex	39,906
Humble P. L. Co., Ingleside	50,759
Illinois P. L. Co., Del Rio, Tex	44,416
Magnolia P. L. Co., De Leon, Tex	19,776
Pasotex P. L. Co., El Paso, Tex	6,853
Shell P. L. Co., Healdton, Okla	39,763
Shell P. L. Co., Houston, Tex	29,614
The Texas Company, Houston, Tex	25,583
Total	321,659

Tank Car Shipments

Humble P. L. Co., McCamey, Tex	137
Reagan County Pur. Co., McCamey	1,156
Thomas & Brann, Grant City	120
Orient Co., McCamey	100
American Pet. Co., Pyote	.....
Southern Crude O. P. Co., Wickett	20,386
Total	21,899

Runs to West Texas Refineries

Bluebonnet Ref. Co., Wickett	.....
Burford Ref. Co., Pecos	4,695
Col-Tex Ref. Co., Colorado	7,500
Cosden Ref. Co., Big Spring	7,240
Great Western Ref. Co., Big Spring	3,467
Humble Oil & Ref. Co., McCamey	.....
Mid-Tex Ref. Co., Midland	1,527
Tonkawa Ref. Co., Pyote	609
Big Spring Ref. Co., Big Spring	1,255
Richardson Ref. Co., Big Spring	3,826
Wickett Ref. Co., Pyote, Tex	225
Total	30,344

Summary

	Last period	This period
Pipe line runs through trunk lines	307,250	321,659
Tank car shipments	18,023	21,899
Runs to West Texas refineries	31,802	30,344
Total daily distribution	357,075	373,902
Total daily production	347,810	347,717
Daily average from storage	9,265	26,185

PECOS COUNTY

Week Ending December 17

Company, lease—	Wells	Prod.
M. H. Black:		
Fee	1	10
California Co.:		
Smith—Lease 1	19	10,875
Smith—Lease 1, Sec. 37	4	511
Smith—Lease 1, Sec. 23	8	2,196
Smith—Lease 1, Sec. 21	5	750
Smith—Lease 2	3	113
Smith—Lease 3	13	1,854
Smith	2	18
Tippett—Lease 1	1	30
University	1	63
Continental Oil Co.:		
Yates-A	8	534
Salvage	..	4,085
University-A	3	170
Cosby Drilling Co.:		
Smith	2	660
Dorn & McGee:		
Pecos Valley	1	23
Grayburg Oil Co.:		
Pecos River Bed	6	369
Salvage	..	214
Gulf Production Co.:		
All leases	42	17,194
Henshaw Oil Corp.:		
University	1	37
Humble Oil & Refining Co.:		
Smith-A	12	2,094
Smith-B	7	1,097
Kirby Petroleum Co.:		
Tippett	2	60
Kirby Petroleum and Edson:		
Tippett	1	240
McCarty Oil Co.:		
Gray	1	10
Bennett	1	8
McMan Oil & Gas Co.:		
Smith-A	1	1,486
Smith-B	4	1,381
Smith-C	9	1,046
Tippett	3	346
Richardson	2	126
McMan and Continental:		
Yates	17	5,571
Mid-Kansas and Transcontinental:		
Yates-A	28	21,152
Yates-B	27	7,032
Salvage	..	187
Yates-C	11	8,448
Salvage	..	233
Yates-D	7	8,121
Yates-E	3	841
Yates-F	4	726
Yates-G	3	1,265
Yates-H	10	9,412
Smith	6	2,538
Smith-Taylor	19	4,408
Landreth Prod. Co.:		
University-A	2	657
University-C	2	1,243
University-D	2	2
University-F	1	367
University-G	2	217
University-H	1	20
Landreth and World:		
University-B	5	3,221

Company, farm, section, block—	Wells	Prod.
J. D. O'Mara:		
Buts	1	27
Pecos Valley Oil:		
Fee—Sec. 22, Blk. 26	3	76
Phillips Pet. Corp.:		
Monroe	2	180
Ramsey	4	1,114
Smith	3	660
Plymouth Pet. Corp.:		
Perry	1	42
Red Bank Oil Co.:		
Smith	5	478
Savoy & Mazda:		
Smith	3	660
Shell Pet. Co.:		
Tippett	11	2,879
Smith-A	11	1,436
Smith-B	1	638
Smith-D	4	799
University-Bower-C	4	1,047
Smith-E	1	28
Simms Oil Co.:		
Smith	7	7,014
Skelly Oil Co.:		
Tippett	2	220
Taylor-Link:		
University	6	554
World Oil Co.:		
University	1	55
Total Pecos Field	383	141,168

DAILY AVERAGE PRODUCTION BY LEASES WINKLER COUNTY

Week Ending December 17

Company, farm—	Sec.	Blk.	Wells	Prod.
Amerada Pet. Corp.:				
Cowden	3	B-12	3	27
Atlantic O. P. Co.:				
Hendricks-A	34	B- 5	7	1,877
Hendricks-B	44	26	6	539
Hendricks-C	29	B- 5	8	498
Hendricks-E	41	B- 5	6	600
Hendricks-G	46	26	7	19
Atlantic O. P. Co.:				
Hendricks-F	40	26	12	749
Bankers Prod. Co.:				
Hendricks	30	B- 5	1	...
V. T. Bolin:				
Brown-Altman	4	B- 5	1	4
California Co.:				
Hendricks	29	B- 5	7	567
Continental Oil Co.:				
Hendricks	33	26	4	677
Hendricks-A	29	26	2	68
Hendricks-B	34	26	2	...
Cranfill & Reynolds:				
Hendricks-A	28	B- 5	2	231
Hendricks-B	33	B- 5	1	71
Hendricks-C	33	26	2	438
Hendricks-E	33	26	2	150
Cranfill & Texon:				
Hutchings	47	26	2	325
Culberson Bros.:				
Hendricks	40	B- 5	1	60
Eastland Oil Co.:				
Hendricks	35	B- 5	2	277
Hendricks-B	46	26	1	127
Gulf Prod. Co.:				
Hendricks-A	34	B- 5	13	4,808
Hendricks-B	45	26	11	2,468
Hendricks-C	40	B- 5	6	455
Hendricks	44	26	3	531
Cowden	3	B-12	3	91
Humble Oil & Ref. Co.:				
Hendricks-A	34	B- 5	17	4,548
Hendricks-B	29	B- 5	6	1,497
Hendricks-C	32	26	8	411
Hendricks-D	41	26	1	440
Hendricks-B	39	26	3	201
Hendricks-C	10	B-12	13	6,404
Walton	48	26	1	85
Independent Oil & Gas:				
Hendricks-A	34	B- 5	7	763
Howe-B	44	26	3	119
McCabe	36	B- 5	2	158
Vardeman-B	41	B- 5	6	265
Lion Oil Co.:				
Hendricks-A	41	B- 5	11	1,413
Hendricks-B	34	B- 5	13	2,565
Hendricks-C	45	26	14	3,808
Hendricks-D	44	26	1	88
Magnolia Pet. Co.:				
Hendricks	29	B- 5	8	390
May Prod. Co.:				
Hendricks	34	26	1	10
American Maracaibo:				
Hendricks-A	28	B- 5	1	14
Hendricks-B	28	B- 5	2	75
Mining & Engineering:				
Hendricks	10	B-12	1	...
Murchison & Cranfill:				
Hendricks-A	35	B- 5	2	266
Hendricks-B	35	B- 5	3	402
Hendricks-C	35	B- 5	1	...
Hendricks-H	35	B- 5	1	526
Hendricks-I	34	26	1	104
Republic Prod. Co.:				
Hendricks-A-B	45	26	12	1,069
Hendricks-C	41	B- 5	5	95
Prairie Oil & Gas Co.:				
Hendricks	40	26	6	1,447
Cowden	3	B-12	6	1,545
Shell Pet. Corp.:				
Hendricks-A	45	26	5	523
Hendricks-B	29	B- 5	5	1,968
Hendricks-C	29	B- 5	7	395
Hendricks-D	41	B- 5	3	119
Hendricks-E	40	B- 5	3	289
Hendricks-F	46	26	6	226
Hendricks-G	39	26	1	59
Shell-Texas Company:				
Cowden-A	3	B-12	6	1,872
Hendricks	45	26	6	3,010
Hendricks-A	29	B- 5	7	730
Hendricks-B	40	26	4	217
Hendricks-C	40	26	6	1,161
Hendricks-D	40	26	6	191
Hendricks-E	39	26	2	79
Skelly Oil Co.:				
Hendricks	40	26	12	3,549
Hendricks-B	10	B-12	2	15
Hendricks-C	39	26	1	43
Southern C. O. P.:				
T-67 Hendricks-A	42	B- 5	3	113
T-67 Hendricks-3-A	4	B-12	4	300
T-67 Hendricks-B	44	26	5	255
T-67 Hendricks-3-B	33	26	4	440
T-67 Hendricks-C	33	B- 5	5	465
T-67 Hendricks-2-D	27	26	5	893
T-67 Hendricks-E	42	B- 5	4	87
T-67 Hendricks-F	33	B- 5	5	454
T-68 Hendricks-3-A	35	B- 5	2	114
T-68 Hendricks-B	46	26	2	51
T-88 Hendricks-A	44	26	6	500
T-88 Hendricks-B	4	B-12	6	140
T-88 Hendricks-C	28	B- 5	8	945
T-88 Hendricks-D	4	B-12	6	1,903
T-88 Hendricks-H	28	B- 5	7	632
T-88 Hendricks-I	20	B- 5	7	372
T-88 Hendricks-J	30	B- 5	5	506
T-88 Hendricks-K	41	26	7	914
T-88 Hendricks-L	4	B-12	4	386
T-88 Hendricks-M	35	26	33	9,865
T-88 Hendricks-N	28	26	7	2,073
T-88 Hendricks-O	22	26	4	348
T-88 Hendricks-P	28	26	2	300
T-88 Hendricks-Q	27	26	2	739
T-88 Hendricks-R	27	26	3	738
T-88 Hendricks-S	34	26	4	1,578
T-88 Hendricks-T	34	26	7	886
T-88 Hendricks-U	41	26	10	1,054
T-88 Hendricks-V	29	26	1	50
T-88 Hendricks-W	5	B-12	1	232
T-88 Hendricks-CX	21	26	4	893
T-89 Hendricks-A	45	B- 5	3	186
T-89 Hendricks-B	35	B- 5	2	378
T-89 Hendricks-C	35	B- 5	3	527
T-89 Hendricks-D	35	B- 5	1	155
T-89 Hendricks-E	40	B- 5	3	92
T-89 Hendricks-F	40	B- 5	2	180
T-89 Hendricks-H	46	26	2	155
T-89 Hendricks-I	10	B-12	2	41
T-89 Hendricks-J	9	B-12	8	623
T-89 Hendricks-L	15	B-12	2	583
T-90 Hutchings	47	26	2	367
Texon Oil & Land Co.:				
Hendricks-A	41	B- 5	6	167
Hendricks-B	45	26	6	1,451
Total Hendricks Pool	566			91,923

Leck Area

Atlantic-Kesslar & Logan:				
Leck	3	74	2	29
Amerada Pet. Corp.:				
Leck	3	74	2	215
Empire Gas & Fuel Co.:				
Daughterty	3	74	3	91
Magnolia Pet. Co.:				
Scarborough	1	C-22	2	172
Gulf Prod Co.:				
Scarborough	1	C-22	1	52
Daugherty	3	74	1	451
Shell-Llano Oil Co.:				
Daugherty	1	C-22	5	269
Shell-Danciger:				
Daugherty	3	74	2	67
Skelly Oil Co.:				
Daugherty	22	16	4	1,085
Tidal Oil Co.:				
Scarborough	1	C-22	1	85
Prairie Oil & Gas Co.:				
Leck	16	74	1	350
Daugherty	3	74	1	119
Scarborough	1	C-22	1	56
Warner-Quinlan:				
Leck	3	74	1	397
Total Leck Pool	27			3,438

O'Brien Pool

Continental Oil Co.:				
Morton-A	10	B-12	1	72
Morton-B	10	B-12	2	82
Wentz Oil Corp.:				
Morton	10	B-12	1	90
Simms Oil Co.:				
Sealy	50	F	1	12
Richardson and others:				
Stockton	50	F	1	...
Total O'Brien Pool	6			256
Grand total Winkler County	599			95,617

STATE-OWNED BENZINE PLANT

It is reported from Tallinn that the Estonian Government has approved the construction of a large refinery for the production of benzine from oil shale. The administration of the state-owned oil shale mines has been authorized to start constructoin of the plant early next spring. The contract for the plant, estimated to cost 360,000 Estonian crowns, will, in all probability, be awarded to the Berlin firm, Heckmann. The daily benzine production of the plant will be 75 tons, which will cover approximately 60 per cent of the total benzine requirements of the country.

The administration of the oil shale mines hopes that it will be able to sell the benzine to be produced by the new plant at a considerably reduced price, for 0.24 Estonian crowns or $0.064 per liter instead of the present price of 0.34 Estonian crowns or $0.091 per liter.

LAGO SHIPMENTS

NEW YORK, Dec. 23.—Lago Oil & Transport Co., during the week ended December 13, shipped 742,977 bbls. of Zenezuelan crude to the Pan American refinery at Aruba, an average of 106,140 bbls. daily, compared with 92,252 bbls., or 113,179 bbls. per day, in the previous week.

Production by Lago in Venezuela for the week ended December 13 was 667,476 bbls., an average of 95,354 bbls. daily, against 648,719 bbls., or 92,674 bbls. per day, in the previous week.

PIPE LINE CARRYING OIL TO GULF FROM VAN POOL IN EAST TEXAS

By L. E. Bredberg

FORT WORTH, Tex., Dec. 23.—Oil was first started on its way out of the Van Pool, Van Zandt County, last week to the Pure Oil Co.'s refinery located at Smith's Bluff. The 10-inch line from the tank farm, west of the four producing wells of the Pure Oil Co. and Shell Petroleum Corp., to the loading rack at Chandler, has been spasmodically transporting crude and pouring it into tank cars all week, having run a total of around 15,000 bbls. up to the present time. The line has not been running regularly so far, although the four wells averaging better than 6,000 bbls. daily on various size chokes could without a doubt keep it full if allowed to flow open.

The discovery well is now on a seven-eighths inch choke, flowing better than 700 bbls. daily, while the other three wells are still on a nine-sixteenths inch choke. Pure Oil Co.'s No. 1 Thompson is flowing better than 1,700 bbls. per day, Shell Petroleum Corp.'s No. 1 Tunnell is flowing more than 1,850 bbls. per day and No. 2 Tunnell is averaging better than 1,800 bbls. per day. No. 1 Jarman now has the 6⅝-inch casing, with a packer, set at 2,491 feet.

Although there have been numerous reports as to more locations made in the Van Pool, there has been no official announcement, although the companies will probably stake several during the next week, drilling of these locations to begin at once.

However, in this new district, opened by the Pure's discovery, there are more locations, drilling wildcats and core tests drilling than ever before in the history of East Central Texas, about 40 in all, at the present writing. Many drilling blocks are being assembled, and tentative locations made for future tests, some of them to be spudded within the next 60 or 90 days. One of these tests is to be near the town of Swan in Smith County. J. K. Hughes Oil Co. has taken over a 6,000-acre block for this test, and a well is to be started in 60 days.

The Shell Petroleum Corp. is now drilling on its ninth core test in Henderson County, and the Mid-Kansas Oil & Gas Co. continues to core drill in Cherokee and Rusk Counties. Roeser & Pendleton are rigged up on their No. 1 Moody test and are ready to spud. This test is located in the W. L. Moody 200-acre tract in the James Walsh Survey, 7 miles east of the town of Bethel in Anderson County. The East Texas Oil Corp. is still shut down at 1,160 feet on its No. 1 Kadane, in the NW cor. of the John McFadden Survey, Smith County.

Before the discovery well was completed in Van Zandt County in October, four men purchased a lease on a town lot of Van for $4,000 and this week the same lot was sold to the Pure Oil Co. for the record-breaking sum of $100,000. The lot was located in the original block of the Pure Oil Co., and, if a location had been staked and a well drilled by the owners, it would have called for the drilling of several offset wells, which would have temporarily demoralized the unit development plan now in operation in this field, and would have cost a considerable sum to the company which would have had to drill the offset wells. Paying this huge sum, an equivalent of nearly $700,000 per acre, was done in the interest of curtailment and to prevent unecessary development at this time.

E. B. Tunnell is owner of the tract. He formerly paid $400 for a half interest in it and a general store, 11 years ago, and had not the slightest idea of ever realizing that the lot would some day demand an amount large enough to purchase a building site in one of our largest cities.

Drilling Report

C. F. Lytle and associates have abandoned their deep test, No. 2 Thompson, at Mexia, Limestone County, and are skidding to a third location. This test has been showing oil in a sandy lime at 4,347 feet but was bailed dry and quit as a failure. Haskell and associates also have abandoned a test, their No. 1 M. C. Strange, at Currie, same county, after drilling at 3,110 feet.

With the exception of two shallow chalk tests in the Mount Calm area of Hill County, these were the only completions in the East Central Texas division. The Mount Calm tests were Mayhawk & Pinkerton's No. 1 Nelson and Harper and Latson's No. 4 Jones.

On the Boggy Creek Dome, Anderson and Cherokee Counties, Humble Oil & Refining Co.'s No. 2 Gauger, on the south side, is running liner. This test is in sandy shale showing oil at a total depth of 3,597 feet. Humble's No. 1-B Todd is drilling shale and lime at 3,552 feet; No. 5 Earle & Ragsdal is drilling rock at 980 feet, and No. 1 Gammill, No. 1 Cook and No. 4-A Jones are rigged up.

Humble's No. 1 Birdwell on the Posey Saline, southeast of the Boggy Creek Dome in Anderson County, is drilling sandy shale at 3,905 feet.

Delta County Development Co.'s No. 1 Hays, Delta County, is drilling hard lime at 1,307 feet. Haley & Young's No. 1 Knight, Freestone County, has resumed swabbing after failing to cement off bottom water. Killam & Phillips' No. 1 Scramalde, Robertson County, is drilling shale at 1,746 feet. A. M. Wilborn's No. 1 Hudspeth, Upshur County, is drilling broken chalk at 3,705 feet. C. M. Joiner's No. 2 Bradford, Rusk County, is drilling sticky shale at 1,530 feet. Magnolia Petroleum Co.'s No. 1 Duran, Lollar Survey, Rusk County, is reaming with the bottom in lime at 4,010 feet.

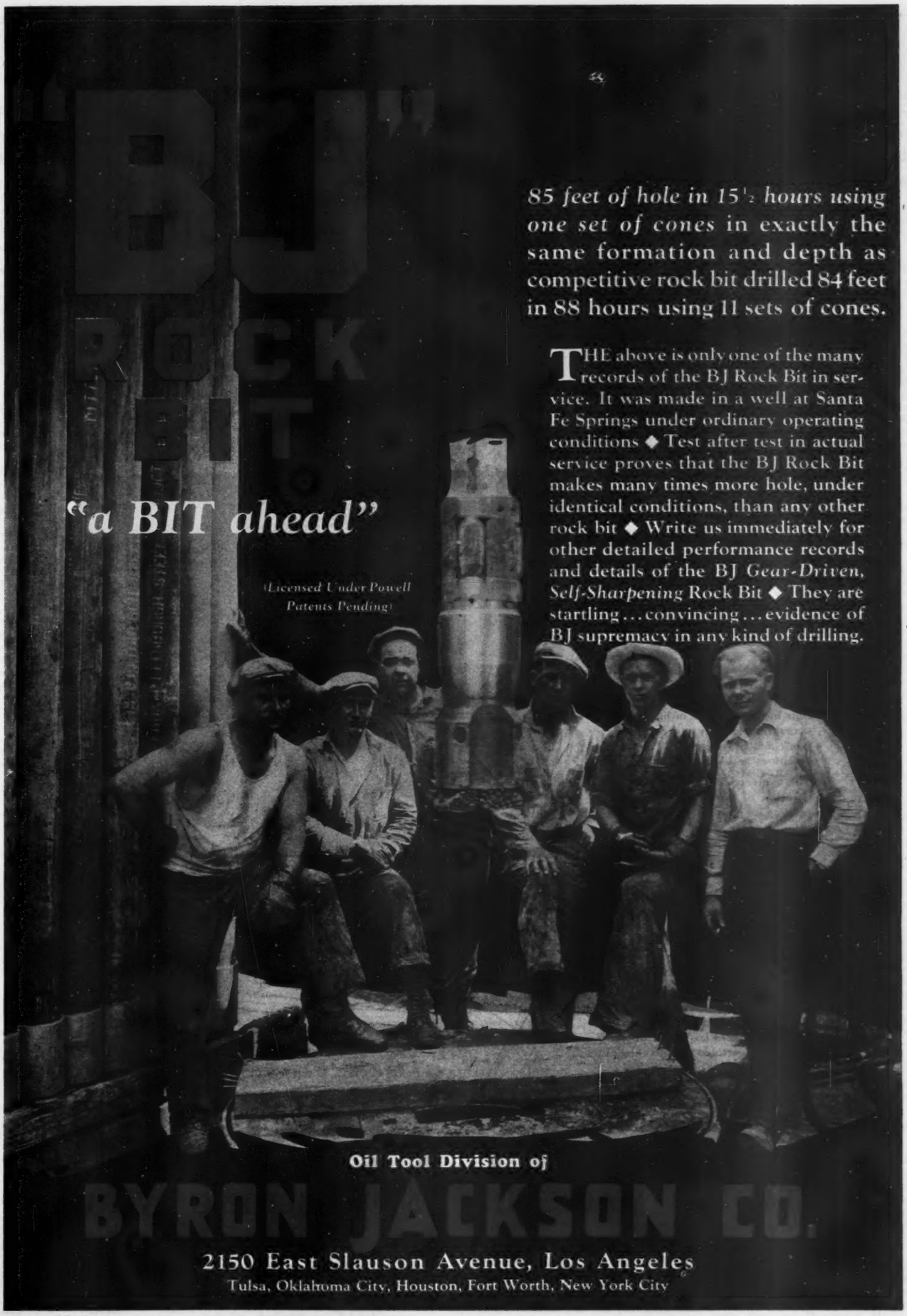
Daily average production of the division for the week ended December 21 was:

East Central Texas

Boggy Creek	3,300
Cedar Creek	80
Currie	391
Hill County	41
Mexia	5,044
Minerva	600
Nigger Creek	250
Powell	6,808
Richland	290
Thrall	35
Van	3,665
Wortham	940
Total	21,444
Week ending Dec. 14	19,814
Increase	1,630

TRANSFER OF OFFICIALS BY ATLANTIC COMPANY

Because of more important affairs in the West Texas area, Atlantic Oil Producing Co. is closing its offices at Shreveport, La., leaving only C. A. Strahan, scout and land man, in that district. W. C. Coolidge, division manager, is transferred to the Dallas headquarters, effective January 1, as assistant to E. H. Blum, vice president and general manager. E. H. Finch, division geologist, is transferred to Southwest Texas with headquarters at San Antonio, and John Marston, land man, is assigned to Dallas as assistant in the land department. R. E. Whiting, production superintendent, goes to Dallas in the same capacity. Others transferred are J. E. Saunders, chief clerk, Dallas accounting department: L. H. Hutchinson, engineer, to Dallas engineering department; Henry J. Morgan, paleontologist, to San Angelo in the same capacity; O. U. Roberts, geological clerk and scout, to the San Angelo headquarters. A. S. Carruthers will remain in the Shreveport division as manager of all the producing properties and drilling activities with headquarters in West El Dorado where district operating offices will be maintained. The Atlantic Pipe Line Co. will continue its offices at Haynesville under S. P. Elliott as superintendent.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ROCK BIT
"a BIT ahead"
(Licensed Under Powell Patents Pending)
85 feet of hole in 15½ hours using one set of cones in exactly the same formation and depth as competitive rock bit drilled 84 feet in 88 hours using 11 sets of cones.
THE above is only one of the many records of the BJ Rock Bit in service. It was made in a well at Santa Fe Springs under ordinary operating conditions ◆ Test after test in actual service proves that the BJ Rock Bit makes many times more hole, under identical conditions, than any other rock bit ◆ Write us immediately for other detailed performance records and details of the BJ Gear-Driven, Self-Sharpening Rock Bit ◆ They are startling ... convincing ... evidence of BJ supremacy in any kind of drilling.
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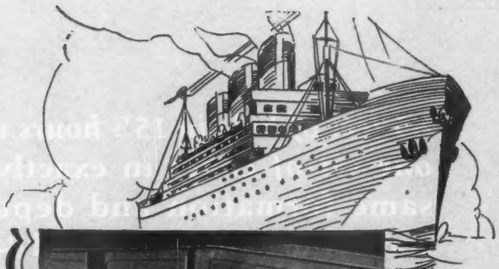
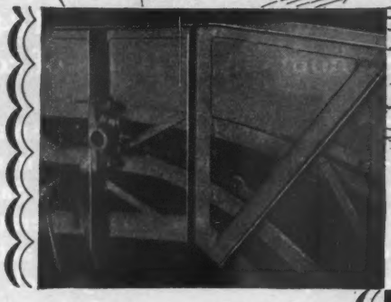




Again ARC-WELDING *proves its* ADAPTABILITY *to practically every kind* of metal-joining job

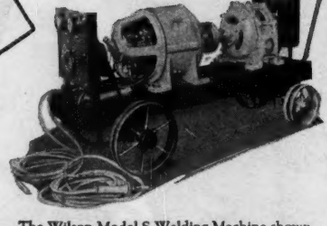
ON this page is shown one of four portable apron conveyors, built for loading and unloading steamship baggage. Made of light-gauge structural steel, they were *completely fabricated* by Wilson Arc-Welding Machines and Wire.

The Conveyors Construction Corporation of New York chose arc welding after thorough investigation of other methods of fabrication—one of which resulted in warpage of the light-gauge metal, and another in weak and rocky frames.

In contrast, the *arc-welded* conveyors—made of *lighter-gauge metal*—are perfectly rigid in both horizontal and vertical planes after a year in service—handling trunks up to 400 pounds at the rate of 12 per minute.

Arc-welding is lowering production costs in practically every industry where metals are joined—producing *stronger welds at less cost.* Can you *afford* to overlook the advantages of arc-welding? You are invited to consult Wilson engineers without cost or obligation.

Whatever YOUR industry ~whatever YOUR metal-joining problem ~investigate ARC-WELDING



The Wilson Model S Welding Machine shown above is the Type 200 Amperes, one-operator, electric-motor-driven outfit.

WILSON WELDER & METALS CO. INC., 18 WILSON BUILDING, HOBOKEN, N. J.

WILSON

WELDING MACHINES AND WELDING WIRE

Natural Gas Developments

DISTRIBUTION OF GAS FROM FIELDS IN TEXAS

SAN ANTONIO, Tex., Dec. 23.—Daily open flow capacity of gas wells in the State of Texas as reported to the oil and gas division of the Texas Railroad Commission for the month of August was 19,816,917,000 feet and the amount of gas withdrawn from these wells during the month was 17,137,441,000 feet.

Distribution of the gas over the State, as shown by grouping the counties together by districts, shows that in Southwest Texas, in what is frequently referred to as the San Antonio territory, including counties in the Laredo district, those around San Antonio and those around Corpus Christi, there is over half of the daily open flow capacity of wells of the State, the daily open flow capacity of these areas being 10,932,289,000 feet compared with 19,816,917,000 for the entire State. The Panhandle is a close second with 7,245,281,000 feet.

Duval County leads the State in the daily open flow capacity, having 3,341,388,000 feet compared to 3,270,173,000 in Wheeler County in the Texas Panhandle.

For several months the total daily open flow capacity of wells and the monthly withdrawals have varied very little from month to month. A study of the gas possibilities of the State and the gas production is an interesting study in connection with the question of oil production and the gas production figures have not been available until recently.

A much higher percentage of withdrawals to capacity is prevailing in the East and North Texas districts than in the Panhandle and Southwest Texas.

The figures for the entire State for August are as follows:

Natural Gas Production

Open flow capacity of the gas wells of the State of Texas and the total amount of natural gas withdrawn from wells in Texas during the month of August, as reported to the oil and gas division of the Texas Railroad Commission, was as follows:

Company—	Daily open flow	Withdrawals
Southwest Texas District		
Bexar	3,267,000	31,252,000
Duval	3,341,388,000	921,677,000
Jim Hogg	712,069,000	122,718,000
Kleberg	94,000,000	34,361,000
Live Oak	568,300,000	455,734,000
Medina	244,065,000	257,911,000
Nueces	851,400,000	477,051,000
Refugio	2,046,200,000	1,448,674,000
San Patricio	1,350,000,000	1,088,487,000
Victoria	2,000,000	6,767,000
Webb	1,603,173,000	967,803,000
Zavala	17,625,000	4,698,000
Zapata	98,802,000	82,862,000
Total	10,932,289,000	5,399,995,000
Gulf Coast District		
Austin	35,000,000	61,384,000
Fort Bend	97,000,000	80,186,000
Harris	25,000,000	.....
Jackson	1,000,000	7,677,000
Washington	10,000,000	11,513,000
Total	168,000,000	160,765,000
East Texas District		
Anderson	33,000,000	15,568,000
Grayson	22,132,000	15,761,000
Harrison	157,645,000	557,741,000
Limestone	3,346,000	15,575,000
Panola	360,283,000	1,696,180,000
Total	576,406,000	2,300,325,000
North Texas District		
Brown	140,791,000	128,998,000
Callahan	17,853,000	26,727,000
Clay	3,500,000	43,023,000
Coleman	66,617,000	245,915,000
Comanche	17,265,000	23,357,000
Cooke	500,000	3,905,000
Eastland	92,237,000	1,009,778,000
Erath	91,219,000	257,745,000
Foard	2,050,000	2,854,000
Montague	79,318,000	14,679,000
Palo Pinto	100,125,000	198,324,000
Parker	151,000	2,254,000
Runnels	3,259,000	16,492,000
Shackelford	6,127,000	532,000
Stephens	128,377,000	827,550,000
Throckmorton	4,632,000	1,100,000
Young	10,223,000	21,487,000
Total	764,244,000	2,825,270,000
West Texas District		
Crane	1,572,000	2,654,000
Howard	1,037,000	17,126,000
Mitchell	2,000,000	.....
Pecos	6,640,000	.....
Ward	4,972,000	21,607,000
Winkler	114,476,000	312,462,000
Total	130,697,000	353,849,000
Panhandle District		
Carson	1,345,562,000	1,744,042,000
Gray	885,042,000	1,386,630,000
Hartley	2,840,000	.....
Hutchinson	787,920,000	545,252,000
Moore	541,824,000	212,636,000
Potter	411,920,000	483,100,000
Wheeler	3,270,173,000	1,225,077,000
Total	7,245,281,000	5,596,737,000
Grand total	19,816,917,000	17,137,441,000

CARDSTON GAS FRANCHISE

CHATHAM, Ontario, Dec. 21.—The municipal council of Cardston, Alberta, has been approached by Franco Oils, Ltd., for a franchise to supply gas to the town of Cardston. The company includes Pat Burns and Guy Weadick of Calgary and John S. Smith of Cardston, with C. L. Woods as business manager. It has leased extensive acreage on a structure near Cardston, and has located its No. 1 test on the Frank Bevans homestead on Lees Creek, within a mile of the town, and has contracted to drill within a year. A tentative arrangement has already been made whereby Franco Oils, Ltd. is to receive a franchise if it secures gas in the Cardston area before any other company. Gas must, however, be secured within 18 months, and be sold at competitive rates.

GAS SALES INCREASE IN OCTOBER

An increase of 12 per cent in gas sales for October, 1929, over the corresponding month of the preceding year, is indicated by reports to the American Gas Association from companies representing approximately 80 per cent of the industry. The customers of these companies aggregated 9,607,000, an increase of 2.2 per cent.

For the first 10 months of 1929, these companies reported gas sales of 361,000,000,000 feet, representing an increase of 9.7 per cent. Revenues from gas sales aggregated $342,335,000, on increase of 4.4 per cent. This relatively slower rate of increase in revenues is the result in part of rate reductions in various sections, and in part to the more rapid increase in gas sales for industrial-commercial uses, where because of large volume consumption coupled with steady all year round use, the companies are able to profitably handle this class of business at lower than average rates.

CASTOR GAS FRANCHISE

CHATHAM, Ontario, Dec. 21.—Young Petroleums, Ltd., of Calgary, is negotiating for a franchise to supply natural gas to Castor, Alberta. The company, headed by D. J. Young and D. M. Blow of Calgary, is planning to drill for gas a quarter mile north of the town. Hudson's Bay Oil & Gas Co. is core drilling between 10 and 12 miles north of Castor, preliminary to starting a commercial test next spring; and Edmonton interests are planning to drill still further north.

DIXIE GAS & UTILITIES

Dixie Gas & Utilities Co. for 10 months ended October 31, 1929, reports gross revenue of gas sales of $1,800,701, against $961,130 in first 10 months of 1928. Profit after interest and ordinary taxes was $540,194 available for depreciation, depletion and federal taxes.

TO WIN CONFIDENCE OF GAS CONSUMERS

By Gordon D. Wickett
General Manager, Windsor Gas Co., Ltd., Windsor, Ontario*

During the last decade, or possibly longer, business in general has undergone a great change. The customer's good will is now of paramount importance. No longer is it considered good business to get as much as the trade will stand. Or in other words, get as much as possible and give as little as possible in return. Any business conducted in such a manner today would not last long.

Speaking with regard to gas utilities good will or confidence is created by furnishing a satisfactory supply of gas—that means stabilized pressure and quality of product which will give the customer the greatest satisfaction. It does not matter that we do this for 364 days in a year if we fail for the three hundred sixty-fifth day there is immediately criticism of our service. Therefore, it is necessary that we supply this quantity and quality of product every day throughout the year.

Now next to the gas itself comes our contact with the customers. Public relations are really personal relations. In carrying on a utility business there are many, many daily contacts and unless these are conducted in a patient, courteous and tactful manner we are not going to create all the good will that we are capable of.

The point of contact is threefold—by telephone, by letter, or face to face. Do you men know of the method of handling calls by your telephone girl or girls? Connection with the wrong department, or no connection at all, or a cutting off after connection, misinformation, or no information at all—all these sometimes make the difference between friends or enemies of your company.

A customer writes to the company and receives in reply, form letter No. 16. He writes again, indicating that the form was not elastic enough to fit his trouble. Form letter No. 22 reaches him and he gives up in disgust but not with the utmost friendliness on his part.

As to the meeting face to face—your meter readers probably come in contact with practically all your customers or customers' families, many of whom would not think of coming to the company's office. Probably these employes can do more than any other employes in keeping the customer good natured. How much time do you give to the personnel of these employes or their conduct?

Then there are the customers that come to the office. It is easy for a person entering the office of a public service company to go away with a feeling of hostility to the company if he is not handled properly. Too many employes seem to think that because they know where every department is located and know the inner workings of the company that anyone else entering the office is densely ignorant if he is not equipped with the same information. The result is often unreliable information and a brusqueness of attitude which repels the customer. He is shunted around the corner, upstairs and downstairs and is lucky to complete his business in the course of considerable time.

Company officials, with the best intentions in the world, have seen failure in securing public confidence because of the attitude of a few subordinates of the company who fail to realize their responsibility in dealing with the public.

Complaints against the management of companies are often based largely on the

(Continued on Page 226)

*Before Natural Gas and Petroleum Association of Canada, at London, Ontario.

CALIFORNIA COMPANY IS CONSERVING GAS

LOS ANGELES, Calif., Dec. 21.—An inkling of the financial value of the State's resources to be "reclaimed" through conservation measures of the California natural gas law, is demonstrated by the usage of $2,000,000 worth of this product in the first 10 months of this year by one utility, the Southern California Edison Co. The $2,000,000 in natural gas represents a total of 12,000,000,000 feet and was consumed by Long Beach plants of the Edison company. In the boiler furnaces at the plant 70,000,000 feet of natural gas is now being used daily and the total consumed to November 1 is double the amount burned during the same period last year. The total natural gas consumption for the 10 months' period is equivalent in heating value to 2,300,000 bbls. of fuel oil, or 550,000 tons of coal. Virtually all of the natural gas used by the company would be wasted if not utilized to generate electric energy, because of the great production of natural gas in bringing crude oil to the surface in Southern California oil fields. With its large water storage reservoirs, the Edison Co. is in a position to use gas fuel at times in the year when there is but little demand for domestic gas. During a reversal of conditions and at a period when the domestic gas demand is heavy the company can draw on its water storage to meet requirements of its load by hydroelectric generation of power. This situation permits the gas companies to operate gas compression stations and transmission lines at a much better load factor than would otherwise be possible and ultimately result in lower prices to consumers of both gas and electricity. The quantity of natural gas being used every day at the Long Beach plants is but slightly less than the entire domestic and industrial consumption in the city of Los Angeles at this time of the year.

MISSOURI-KANSAS PIPE LINE

Missouri-Kansas Pipe Line Co. announces it will enter 1930 with approximately 250,000,000 feet of natural gas under its control in the states of Kansas, Missouri and Kentucky. This daily open flow gas test figure is in excess of 100 per cent greater than it was in the middle of 1929 and, according to Frank P. Parish, president, 20,000,000 feet now is available in wells that have been brought in on the company's leases in two Kentucky counties alone, Daviess and Ohio. In Henderson County, Kentucky, another 4,000,000 feet per day is available in the Niagara district. More than 20,000,000 feet open flow gas is on the surface at Blue Springs, Mo. Eight of the wells in this territory are producing 11,000,000 feet, open flow test, per day.

As late as June Missouri-Kansas had a daily open flow gas test of 130,000,000 feet. In October, the 200,000,000-foot mark was passed for the first time.

UNITED GAS EARNINGS

United Gas Co. reports for 12 months ended October 31, 1929, consolidated gross earnings of $13,502,042. After deducting expenses, prior charges of controlled companies and dividends on preferred stock of parent company, the balance was $3,666,496 available for depreciation, depletion and federal taxes.

Earnings from a number of recent developments by United Gas Co. are not included in this statement, including those from new pipe lines to San Antonio, Tex., and Monterrey, Mexico.

HOPKINS

Anti-friction

TOOL JOINTS & COLLARS

Manufactured under license by

BAASH-ROSS TOOL COMPANY

BAKER OIL TOOLS, INC.

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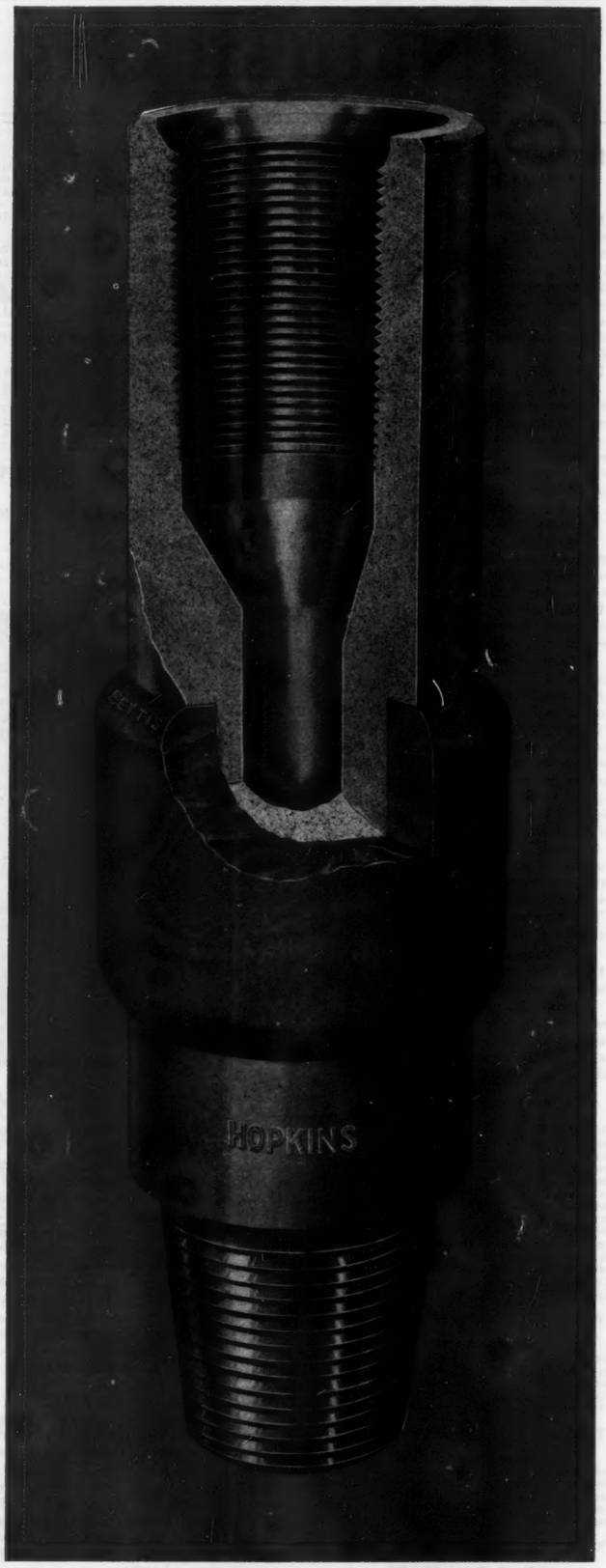

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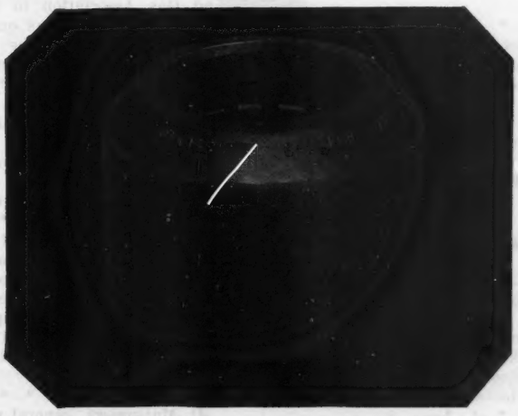
The entire field of applications of anti-friction rubbers to drill pipe, collars and tool joints are controlled by Bettis and Hopkins patents and other patents pending.

Place a resilient cushion at the direct point of contact



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BETTIS PROTECTORS

"Best bet yet!"

Replacing the ordinary tool joint and collar, Hopkins Anti-Friction Tool Joints and Collars prevent metal-to-metal contact right at the point where the greatest strain and wear are set up against the casing. A shallow groove is machined on the joint and collar, to accommodate a Bettis Protector. This rubber locks into place by its resiliency and stays at the critical point of wear.

All the advantages of Bettis Protectors apply to Hopkins Joints and Collars.

Hundreds of these modern joints and collars are in service and the leading oil field equipment manufacturers are licensed to make them.

For positive protection to pipe and casing, for fast and deep drilling and for economy in operation, Hopkins Anti-Friction Tool Joints and Collars are essential.

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Insurance Exchange Bldg., Los Angeles

Texas and Gulf Coast Distributors:
Bettis Sales Co., 616 Public National Bank Bldg., Houston

Oklahoma Distributors:
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Carried in stock at Los Angeles, Santa Fe Springs, Ventura, Kettleman Hills, Bakersfield, Coalinga, Long Beach, Tulsa, Houston, Wink, Texas; Calgary, Alberta, Canada; New York City.

MEN KNOWN IN OILDOM

Sir Henri Deterding

Sir Henri W. A. Deterding's life story virtually is the story of Royal Dutch. The son of an Amsterdam sea captain, after leaving public school he became a messenger for Twentsche Bank of Amsterdam and rose to the chief clerkship. In 1886 he went to the Netherlands East Indies for the Netherlands Trading Company. and was stationed at a remote post at Deli, where he had his first experience in the oil business, selling kerosene. Later he became a company agent at Penang.

J. B. August Kessler, had been studying oil possibilities in the East Indies as a director of Friedman van Kerchem, which traded in Dutch East India products at Java. Convinced of the world's future need of oil and satisfied that Sumatra, Borneo and Java had sufficient stores, he organized at The Hague in 1890 the Koninklijke Nederlandsche Maatschappij Tot Exploatatie Van Petroleumbrennen in Nederlandsche Indie (Royal-Dutch Company for the working of petroleum wells in Dutch East Indies).

Mr. Kessler was made managing director. The Colonial office was at Batavia and while there Mr. Kessler heard of Mr. Deterding's work at Penang for the Netherlands Trading Company, and engaged him as a salesman. As soon as Mr. Deterding had proved his abilities for Royal-Dutch, he was asked to take charge of the entire sales organization in the Far East with headquarters at Singapore.

Here he engaged in the first of long series of bitter battles with competitors, among them American Standard Oil units, and opened negotiations with Marcus Samuel, later Lord Bearsted, founder of Shell Transport & Trading Company, to transport Shell products from the Dutch East Indies to China and elsewhere in the Far East. From this combination grew the present Royal-Dutch Shell interests.

Mr. Deterding became managing director of Royal Dutch in 1901 and in 1902 was elected general managing director. He is a subject of the Queen of Holland, although for his services during the World War was made a Knight Commander of the British Empire. He has been honored by other countries, among them France, Italy and The Netherlands.

PERSONAL PARAGRAPHS

M. C. Juckey, in charge of the Houston Oil Company's offices at Midland, Tex., was in Fort Worth on business.

* * *

James A. Talbot, chairman of the board of the Richfield Oil Company of California, was recently elected to the directorate of the California Standard Finance Corporation.

Monte Warner, independent operator, San Angelo, Tex., was a Fort Worth and Dallas visitor.

* * *

D. P. Hamilton, president of Root Refineries, Inc., has returned to Shreveport, La., from a business trip to Europe.

* * *

Fred Plane is now assistant manager of refinery sales of the Johnson Oil Refining Company, at the Chicago headquarters.

* * *

John A. Sutherland left recently via New York for Negritos, Peru, after spending four months with his parents at Oil Springs, Ontario.

* * *

R. O. Lawrence, land man for the Sinclair Oil & Gas Company, passed through Fort Worth on his way from San Antonio to West Texas.

* * *

George Shelton, land man for the Simms Oil Company, with headquarters in San Angelo, Tex., was a business visitor in Fort Worth and Dallas.

* * *

J. E. Redmond, independent operator at Fort Stockton, Tex., has been confined in St. Johns Sanatorium, San Angelo, Tex., the past three weeks.

* * *

Harvey Stone, salesman with the Mission Sales Company, Wichita Falls, Tex., is making a field trip through Oklahoma on business for his company.

* * *

E. J. Atckison, vice president of Southwestern Engineering Corporation, is in New York City where he will visit the company's branch office in that city.

* * *

F. E. Bernsen, vice president, and D. F. O'Rourke, assistant treasurer, of Lucey Products Corporation, spent the past week at the plants in Chattanooga, Tenn.

* * *

W. W. Rice, assistant sales manager at the Chicago office of the Barnsdall Refineries, Inc., was in Tulsa for several days attending a sales conference.

* * *

Harry Earls, independent operator at San Angelo, Tex., passed through Fort Worth on his way back to West Texas from a visit with relatives at Chicago.

* * *

H. L. Miller, district sales manager for the Jones & Laughlin Steel Corporation, St. Louis, Mo., who was injured in an accident recently, is slowly improving.

* * *

R. E. Witty, scout for The Texas Company at Pecos City, Tex., is visiting in Oklahoma over the holidays. He made the trip from Big Spring, Tex., to Tulsa by air.

* * *

George E. Moore, general manager for Cosden & Company, Inc., has returned to the headquarters at Fort Worth, Tex., after spending several days at the Chicago offices.

* * *

A. C. Galbraith, for two years engaged in special sales promotion work for the Union Oil Company of California, has been made assistant to Vice President R. D. Matthews.

* * *

Rex Hamaker, vice president of Reed Roller Bit Company, Houston, Tex., spent several days in Oklahoma, chiefly at Oklahoma City, where his company recently opened a new store.

* * *

Gilbert Wood, general manager and head of the land department for the Texas-New Mexico division of the Independent Oil & Gas Company, Fort Worth, Tex., has been spending several days in Tulsa on business.

* * *

Rodney Durkee, formerly controller of the General Petroleum Corporation at Los Angeles, Calif., and who was summoned to New York for duty with the Standard Oil Company of New York, was in Los Angeles recently.

* * *

T. A. McAteer, scout for the Gulf Refining Company in the El Dorado and Smackover districts for the past seven years, has been transferred to the geological department and moved to Meridian, Miss., headquarters. He is succeeded at El Dorado by W. G. Booth, formerly pipe line and production scout at El Dorado.

J. Harvey Rose, president of the Bradford Refining Company, Bradford, Pa., has returned from a trip to Europe. He spent most of his time abroad in Italy. Mrs. Rose accompanied him.

* * *

H. J. Adair, of Stamford, Tex., publicity manager of the West Texas Chamber of Commerce and head of the oil bureau of that organization, was in Fort Worth attending the railroad hearings.

* * *

Robert W. Phelps, resident geologist of the Union Oil Company at Brea, Calif., for a number of years, has returned from a honeymoon trip to the northern part of the State, having recently been married.

* * *

H. C. Cain, president of the Duval Texas Sulphur Company, a Moody-Seagraves subsidiary, Houston, Tex., is in California where he is making a short business trip. Mr. Cain is well known to the oil fraternity of the Gulf Coast.

* * *

R. F. Baker, formerly chief geologist of The Texas Company at Houston, Tex., but who earlier in the year was transferred to the New York offices, has been greeting his old friends at Houston on his return for a short business trip.

* * *

D. K. Fagg and H. S. Bassett were recently appointed Mid-Continent representatives for Feedwaters, Inc. Mr. Fagg is now in Tulsa planning to open an office in Tulsa. Mr. Bassett is in Houston, Tex., planning to open an office in Houston.

* * *

Lew Webster, formerly of the land department of The Texas Company at Shreveport, La., but more lately an independent trader in West Texas areas, is one of those attracted back to their old Shreveport stamping grounds by the new field at Zwolle, La.

* * *

Don H. Swindler, district factory representative of J. P. Ratigan Company's Gulf Coast division, Houston, Tex., and family are spending the holidays in Tulsa as guests of Mr. and Mrs. Frank Hugil, and of Mr. Reid Swindler, a student at Tulsa University.

* * *

T. J. O'Sullivan, assistant secretary of the Louisiana-Arkansas division of the Mid-Continent Oil and Gas Association in charge of first aid and membership work, was one of those attending the safety conference at the Standard Oil Company's Baton Rouge, La., plant last week.

* * *

W. J. (Joe) Simmons, formerly scout for the Shell Petroleum Corporation, central division, San Angelo, Tex., has been transferred to the Gulf Coast division working out of Houston. Paul B. Hinyard, who has been at Houston in the Gulf Coast division, has been transferred to San Angelo.

* * *

Ernest L. Hughes spent some time in Muskegon, Mich., where he took charge of operations of the Old Dutch Refining Company plant during the absence of Walter E. Anderson, vice president and general manager. Mr. Hughes also is a vice president of the company and head of the Hughes Oil Company, of Chicago, distributors of petroleum products.

* * *

D. Matsuzawa, general manager of the producing department of the Nippon Oil Company, Ltd., of Tokyo, Japan, and Masao Matsuura, engineer of the North Shakhalin Oil Company of Marunouchi, Tokyo, are touring the principal oil fields and oil centers of the United States. They reached San Francisco, October 24, and devoted considerable time in California, then going to Texas. They were in Tulsa last week and left for the East. After visiting New York, Boston, Washington, Pittsburgh and other centers they will sail from San Francisco for Japan on January 15.

* * *

D. Eyoub, since 1920 a member of the geological staff of the Empire Gas & Fuel Company and other H. L. Doherty interests, has been given a year's leave of absence from the company's service in order to take a commission from the Turkish government to make a geological survey of portions of the Turkish republic with a view to delineating its petroleum possibilities. Mr. Eyoub and family have been residing in San Antonio, Tex., for some time, and Mrs. Eyoub for the present at least will continue to remain in San Antonio but may join Mr. Eyoub later.

In a Comparative Test—

"Oilwell" Imperial Sucker Rods

led the five major makes in tensile strength and resistance to fatigue

"Oilwell" Imperial Sucker Rods are of Alloy Steel, heat treated. They are made in one piece —a process which was pioneered by "Oilwell."

837

OIL WELL SUPPLY CO.

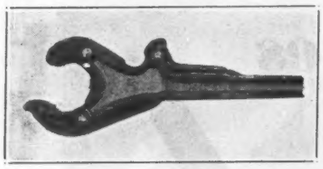
NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

EQUIPMENT AND SUPPLIES

TONGS POSITIVE, SAFE AND EASY TO OPERATE

W-K-M tubing tongs, offering several new features in design and performance, including 30 per cent less weight and instant application, are said by the manufacturers, the W-K-M Co., Inc., Houston, Tex., to be positive, safe and simple to operate. There is no hinged mem-



ber to latch or unlatch, action of the jaws being automatic. Stab them on and they grip immediately, ready for the heaviest pull. A slight jerk of the hand, and they release. Finger-mashing and other injuries are eliminated by use of the single-handle principle of construction.

A special locking device on the side for "break-out" work provides added safety. When thus locked the action of the jaws is the same one way as the other. The tongs will tighten tubing on the forward movement and loosen it on the backward. When unlocked, the tongs tighten on the forward movement only, ratcheting on the backward. The lock is merely a safety device, not essential to the normal operation of the tongs.

Three interchangeable bits, made of high-speed tool steel, make the grip of the jaws secure and certain. They are held in place by quick-change wedges, easily removable. It is not possible to crush tubing with these tongs, as a bumper cast into the lower jaw limits the closure of the jaws around the tubing, allowing only enough grip to move the pipe.

BUSINESS NOTES

The Lucey Products Corp. is now agent for Wickwire Spencer Wire Rope in the Oklahoma territory, carrying stocks at Maud, Oklahoma City, Tulsa and Duncan.

Neville & Cleary, Inc., Candler Building, Atlanta, Ga., and New Orleans, La., now represent the Edward Valve & Manufacturing Co. of East Chicago, Ind., in the southeastern states. This is the territory formerly covered by the late W. J. Neville.

The Union Chain & Manufacturing Co. of Sandusky, Ohio, has opened a new district office in Cleveland, Ohio, with F. H. Dalrymple in charge.

Bailey & Becker, Mid-Continent distributors of Bettis protectors, have removed to enlarged offices at 410 Thompson Building, Tulsa.

MUCH IN J. & L. LITTLE BOOK

Few volumes have more information packed in small space than is found in the little handbook published by the Jones & Laughlin Steel Corp., Pittsburgh, and bearing as its title, "Useful Information for Business Men, Mechanics and Engineers." The eighteenth edition, recently put out, contains 943 pages. It is 2⅛ by 3⅝ inches in size and less than three-fourths inch thick, thus slipping easily into the vest pocket. It contains hundreds of tables, formulas, rules and other information of value in many kinds of construction work. The book is copyrighted.

HYDRAULIC WHIPSTOCK KEEPS RIGHT POSITION

The Hydraulic whipstock developed by the Hydraulic Equipment Corp., Houston, Tex., is designed to be set in a well at any desired depth on a drill stem and without the necessity of filling up below the point of sidetracking. It can be lowered into the hole attached to the drill stem (with a left hand thread in body of whipstock) to the point where it is desired to mill out of casing. Pressure then is applied by a slush pump, which causes slips attached to the lower body of the whipstock to move upward against the sides of the casing and set the whipstock. Any pressure exerted from above after the slips are set causes the whipstock to set more tightly.

The drill stem then is withdrawn by rotating to the right until the stem unscrews from the body of the whipstock (thread in whipstock being left hand).

The manner in which the whipstock is made is said to insure a positive setting of slips when pressure is applied, and to eliminate possibility of the whipstock turning after once set, or slipping down. The teeth in the slips are machined both horizontally and vertically to prevent slipping or turning.

The fact that the whipstock when once set will stay in position means that milling can be accomplished with the least possible danger of the whipstock turning or slipping downward, and that the drill stem and bit will be properly deflected into the milled hole in the casing each time the drill stem goes into the hole for drilling.

EUROPEAN CONTRACTS CLOSED

Substitution of American oil refining methods and machinery for the obsolete facilities used on the European continent will be accelerated by contracts recently closed between Foster Wheeler Corp. and Vacuum Oil Co. for the design, construction and erection of modern refineries in Budapest, Hungary; Hamburg, Germany; Kolin, Czechoslovakia and Czechowice, Poland.

MacCLATCHIE PANTHER OFFICIALLY APPROVED

The aviation industry's first proven radial engine of L-head design has been officially approved by the Department of Commerce in Washington. The power plant is the MacClatchie "Panther," designed during the last two years by the aeronautical engineers of the MacClatchie Manufacturing Co., Compton, Calif., under the supervision of J. Warren MacClatchie, head of the company. It is rated at 150 horsepower at 1,850 revolutions per minute, and is a seven-cylinder, four-cycle, air-cooled unit.

The feature of the "Panther" which has created the most interest among oil men is the elimination of rocker arms, long pushrods and allied parts. Lubrication of these parts has been an important factor in endurance flights. The "Panther" has an overall diameter of only 36 inches. Lubrication and construction are simplified. The valves are actuated by direct contact.

It is planned to start production at once in the company's $200,000 engine plant in Compton, the first section of which has been completed and stocked with precision machinery. The MacClatchie Manufacturing Co. has been known for its oil field specialties. The production of the aviation engine will not interfere with the specialty manufacture, the company states.

LEAVES FOR SOUTH AMERICA

Ray W. Perry has started for South America to represent the MacClatchie Manufacturing Co., Compton, Calif., oil field specialty manufacturing concern. Mr. Perry has been a roughneck, tooldresser, driller and drilling superintendent in many United States fields, and in Mexico, Central America, and India. Just before joining the MacClatchie organization he completed a year in Mexico for the Shell interests. His first work as the MacClatchie representative in South America will be a survey of all its active fields.

STEWART GOES TO SOUTH AMERICA FOR W-K-M CO.

Grafton M. Stewart, formerly assistant manager of the export office in New York of the W-K-M Co., Inc., Houston, Tex., has been appointed South American representative of the company. He will establish an office for the W-K-M organization, probably in Venezuela. Be-

Grafton M. Stewart

fore establishing the South American branch office, however, Mr. Stewart will travel through Colombia, Chile, Ecuador and Argentine.

Mr. Stewart was educated at Texas A. and M. and at Washington and Lee University. His work in the oil industry began in West Columbia, Tex., where he started out at roughnecking. Subsequently he worked for the National Supply Cos. in their warehousing department, going from there to the engineering department of the Mexican Eagle Oil Co., with which he remained three years in Vera Cruz.

TRADE LITERATURE RECEIVED

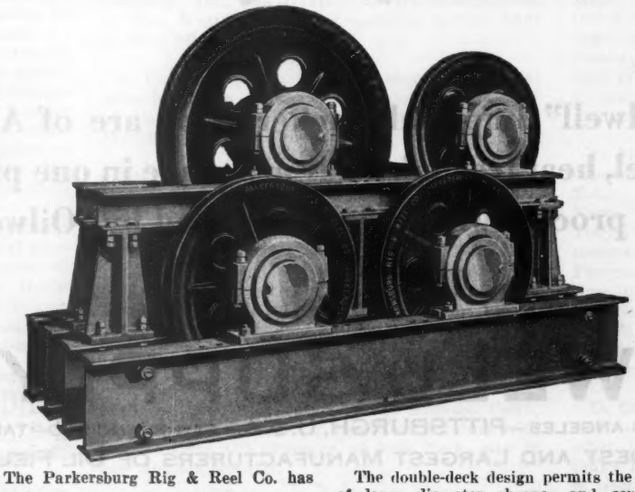
Return bends and other fittings for practically all types of tube stills are shown in the latest catalog of oil refinery equipment, issued by the Key Boiler Equipment Co., East St. Louis, Ill.

The current number of Graphite, published by the Joseph Dixon Crucible Co., Jersey City, N. J., publishes the result of a survey which shows advantages of gas as a fuel for firing core ovens in iron foundries.

The Linde Air Products Co., New York, has ready for distribution an 88-page booklet, "Fabrication of Welded Piping Designs," which is a companion to a booklet previously issued, "Design Standards for Oxwelded Steel and Wrought Iron Piping." It is for the use of engineers and architects in designing oxwelded steel and wrought iron piping systems in accordance with recognized practice.

A new catalog published by the Merco Nordstrom Valve Co., San Francisco, features Nordstrom valves in the various sizes with pressures ranging from normal to 1,500 pounds. Drawings show construction of the different types. Information is given on lubricants to be used in lubricated valves and for different contents within the pipe line. Tables of interest to the engineer are included.

PARKERSBURG INTRODUCES DOUBLE-DECK CROWN-BLOCK

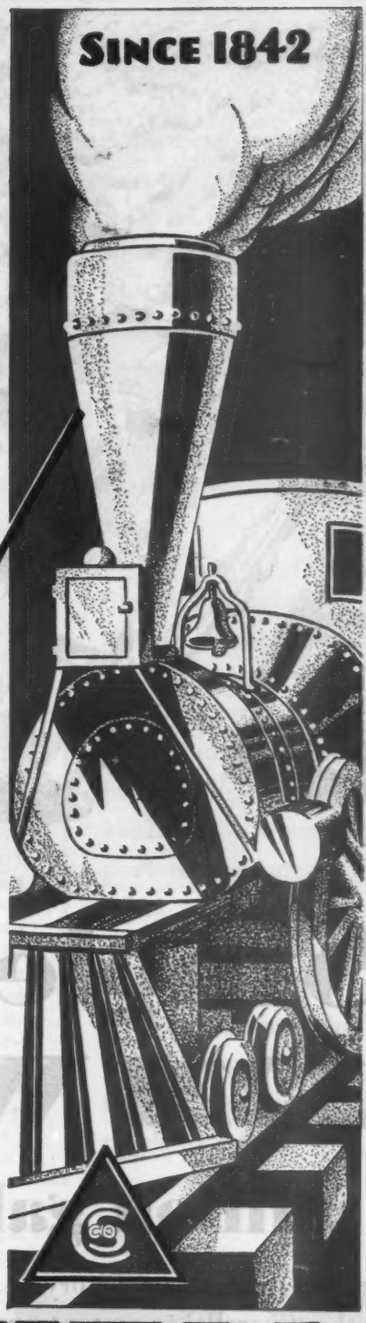


The Parkersburg Rig & Reel Co. has introduced an extra heavy drilling crown-block to meet the needs of deeper drilling. Roller bearings, with selfaligning boxes, manganese steel sheaves, A.P.I. rope grooves, alemite lubrication, and adjustable arrangement for rotary or combination derricks are features.

The double-deck design permits the use of large diameter sheaves and central perpendicular suspension of the lines to the traveling block. The base frames of the new block are made of 12-inch 40-pound I beams, with special Pareelite supports and spacer castings. It may be dissembled easily for hoisting, and is simple to assemble on the water table.

NEW BEDFORD CORDAGE

DRILLING CABLE—BULL ROPES—TORPEDO LINES



Before there was an Oil Industry

When the oil industry was in its infancy, New Bedford Cordage was well known for its high standard of quality for industrial and shipping uses. It has kept this reputation throughout the years.

"If Continental Sells It.... There Is No Better"

THE CONTINENTAL SUPPLY CO.

General Offices: ST. LOUIS: *Export Offices:* 74 Trinity Court, NEW YORK
London Offices: 316-17 Dashwood House, Old Broad St., E. C. 2.

THE CONTINENTAL SUPPLY CO., Ltd.
224 Traders Building, Calgary, Alberta Canada

CONTINENTAL

3548

$7,000,000 INVESTMENT
The Gulf Refining Company has invested over 7 million dollars in White Trucks. Transportation is a vital part of their business and only the proved superiority of White performance could justify such a tremendous investment in a single make of truck.
GULF
GULF REFINING COMPANY

A Single Fleet of 2221 WHITES hauls over 700 million gallons of gasoline a year

Here, in facts and figures, is the story of an accomplishment without parallel in motor transportation. The story of the largest standardized fleet of trucks in the world. The figures are amazing—the facts challenge comparison.

Back in 1911 the Gulf Refining Company purchased its first White Truck. Careful records were kept on that first White—costs were recorded and performance was checked and rechecked. On strictly unbiased tests of performance new Whites have been added each year, until today there are 2221 White Trucks in this single fleet.

With this great fleet of Whites, Gulf hauls over 700 million gallons of gasoline a year—enough gasoline to supply every automobile in the United States with over 30 gallons each. This tremendous gallonage is hauled at an unprecedented low cost per gallon. Besides gasoline the fleet hauls over 107,000 tons of bulk tonnage in oils and greases. More than 24 million truck miles are rolled up annually—

a distance equal to 960 times around the world.

In this fleet there are 416 Whites that have run over 100,000 miles each and many are covering their daily routes with 12 to 14 years of service to their credit. No higher tribute to the dependability of White Trucks could be found than the fact that Gulf has never discarded a White because it has worn out and has never used any other make of truck since 1911.

The distributing of gasoline and oil by the Gulf Refining Company is on a gigantic scale. Gulf operates in 23 states—serving thousands of stations along the Atlantic seaboard from Maine to Florida and the Gulf Coast as far west as Texas. Such widespread operation demands the highest efficiency and economy in hauling. These Whites must keep rolling day in and day out without regard for road or weather.

To accomplish this, supervision of the entire fleet is conducted from headquarters in Pittsburgh. Every item of operating and maintenance cost is accurately recorded, together with the history of each truck, its physical make-up and its performance. There is no sentiment, no leniency in the tabulations. Each truck is judged on the basis of the cold facts. The fleet is always kept up to the highest point of efficiency both from the standpoint of appearance and operation. Even repainting is a part of scheduled attention.

The same kind of remarkable service that has made the great Gulf fleet of Whites famous is true of all White Trucks throughout the oil industry. More White Trucks are in the service of the oil industry than trucks of any other make. There is a logical reason for White leadership—a leadership built on the solid foundation of outstanding performance in every field of business, in every kind of transportation service. The fact that 1311 of the country's foremost owners operate 46,511 Whites in fleets of ten or more is convincing evidence that White gives you more for your transportation dollar whether you buy one truck or a fleet.

The economy and efficiency of standardizing on quality transportation is expressed in the statement of Mr. E. H. Grey, General Superintendent of Motor Equipment, Gulf Refining Co.:

"White Trucks have made a wonderful record in the service of the Gulf Refining Company. Their stability and durability is shown by the fact that all the Whites in our big fleet are still in service. During the last dozen years a number have been lost in accidents, but our pioneer trucks are still on duty. By standardizing on Whites we have lowered operating costs and increased efficiency and our records show that we do not get an increasing maintenance cost with quality units. Our 10-year-old Whites cost no more to operate than new ones added to the fleet."

THE WHITE COMPANY, CLEVELAND

WHITE

A COMPLETE LINE OF FOUR AND SIX CYLINDER

TRUCKS
BUSSES

EQUIPMENT AND SUPPLIES

CIRCULAR GROOVE MADE SURE BY BEAVER TOOLS

The mechanical feature which distinguishes the Beaver grooving tools for use with "Victaulic" pipe joints is that the tools (2-inch and up) lock on the

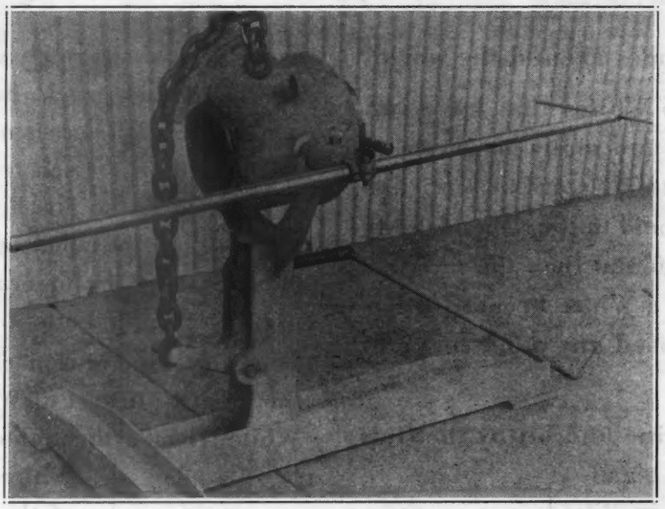
pipe by means of an internal chuck, and the cutting knives make a groove that is perfectly circular, regardless of whether the pipe itself is perfectly round or not.

Few lengths of pipe, particularly the larger sizes, are perfectly circular, and any tool made to follow the periphery of the pipe will cut a groove conforming to its contour, and to whatever degree the pipe end is out-of-round, there will be that much misfit between the groove and the coupling itself.

TWO JOIN NATIONAL TOOL

National Tool & Metals, Inc., Torrance, Calif., manufacturer of hard set metals and oil field specialties, has appointed two new men to its metallurgical and sales force. N. W. Cole is the new addition to the metallurgical staff. Mr. Cole, who for 17 years has been engaged in the business of making and inventing metals, is a graduate of Purdue University, class of 1912. He served the Inland Steel Co. of Chicago 8½ years as chemist, research engineer and open hearth melter. Following this, he held important positions with several other companies. George N. McGarvey has been appointed salesman for the Los Angeles city territory. For the last 15 years he has been supply man, advertising manager and sales representative.

BIT-HOLDER DESIGNED TO SOLVE WELDING PROBLEM

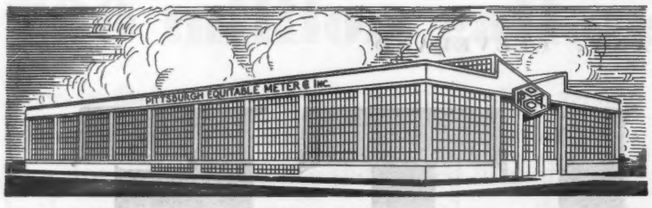


As a solution of one problem of the oil field welding shops, the Stoody Co., Whittier, Calif., has placed on the market the Stoody Universal bit-holder, built entirely of steel, but with no excess weight. Its adjustments are such that one man can keep the bit in any desired position and move it to other positions unassisted.

The calibrated gauge gives a direct reading in bit diameter. This gauge is flexible in use, but sturdy and designed to insure that the bit will be built up true to gauge and true to the axis of rotation. Furnished with a threaded collar to fit the 6-inch standard bit pin, this bit-holder, by the use of subs for the threaded collar, may be adapted to hold a bit or core barrel of any type or size from a 26-inch diameter bit down.

In operation the bit to be welded or ground is screwed into the threaded collar and the thrust of its weight is taken by two rows of fifteen-sixteenths-inch hardened chrome molybdenum steel balls. The tension of rotation is controlled by a thumb screw, which may also be set to lock the head from any rotation. The degree to the horizontal or vertical position of the bit is maintained or changed by the action of a screw attached to a long handled crank. The picture shows an auxiliary means of tilting the bit. With such an arrangement, the welder need not leave his welding position, yet may move the bit as and when desired.

PITTSBURGH EQUITABLE TO HAVE FACTORY IN TULSA



Following announcement of an expansion program, the first step of which was the erection of a new building adjoining the present plant in Pittsburgh, the Pittsburgh Equitable Meter Co. announces the second step, a branch factory to be erected in Tulsa, devoted to the manufacture and servicing of Emco gas meters and regulators and Pittsburgh gasoline, oil and water meters.

The factory site, chosen with the cooperation of the Tulsa Chamber of Commerce, is on the direct route to the oil fields. The new factory will be of brick and steel, with the front of white stucco. The company's Tulsa offices will be moved from the Kennedy Building to the new plant upon its completion so that a direct tieup between factory and offices can be maintained at all times. The grounds are to be landscaped and the whole property and building will be flood-lighted at night.

The growth of the Pittsburgh Equitable Meter Co.'s business in the Southwest has been rapid. Four years ago its first Tulsa office was opened with A. J. Kerr, district manager for Oklahoma, Arkansas, New Mexico and northern Texas, in charge. Since that time business has developed so that it demands a branch factory where the company's line of fluid and gas meters and regulators can be manufactured and serviced without the delay of sending to the company's main offices and factories in Pittsburgh.

STANDARD MILLER USED FOR DRILL-HEAD TEETH

Adaptation of standard milling machines equipped with special fixtures and indexing arrangements for handling a variety of difficult jobs, presents many new methods of tooling. An application of a standard miller for milling teeth in steel cutters for oil well drill heads is that of a standard 5-48 Plain Cincinnati Hydromatic, made by the Cincinnati Milling Machine Co., Cincinnati, Ohio, with the one-way table feed cycle, equipped with special fixtures and carrying six form cutters.

With this arrangement eight cutters are mounted on each of three mandrels. A special three-spindle hand indexing fixture holds these mandrels between centers. A feature of the fixture is in the automatic means for tightening the driving keys of each spindle which fit into the work mandrel. Cam-operated clamps are also provided for clamping the spindles solidly in the fixture.

Two teeth in each cutter are milled from the solid during each work cycle by the six 6-inch diameter form cutters mounted on a standard No. 2-B 30-5 Cincinnati arbor. On this job the cutter revolutions per minute is set at 53 and the table feeds at a rate of 10-inch per minute.

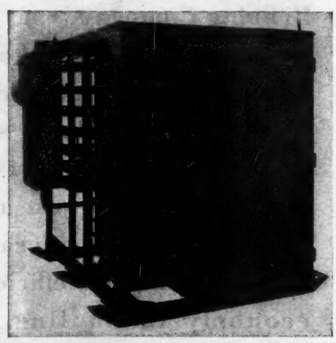
Each cutter requires 24 teeth and since two teeth are milled during each cycle, 12 indexings of the fixture are made. This indexing is obtained by turning the hand lever on the fixture, which transmits this motion through two change gears having 35 and 42 teeth respectively. In turn, a shaft is driven on which three worms are mounted and mesh with worm wheels on the spindle. The ratio of each worm wheel is 5 to 1. One revolution of the index handle gives one-sixth of a turn of the work. Thus one-half a turn gives one-twelfth of a revolution of work, which is required when indexing from one cutting position to another.

WESTINGHOUSE DEVELOPS NEW DRILLING CONTROL

A new magnetically operated control unit for operating wound rotor induction motors for rotary drilling in the oil fields has been developed by the Westinghouse Electric & Manufacturing Co. The new control is designed especially for rotary drilling service.

The control units are completely wired and assembled in the factory, thus facilitating transportation and installation. All parts of the control unit are compactly mounted on a rigid structural steel framework and a heavy sheet steel cabinet is incorporated in one end of the framework for enclosing the control panel. In order that the units may be moved readily from one location to another, three skids made of 6-inch channels are welded under the framework, and holes are drilled in the end of each skid so that hooks can be inserted.

Two three-pole primary contractors with magnetic blowouts provide for forward and reverse operation of the motor,



Three-quarter rear view of the rotary drilling controller showing the structural steel framework that encloses the controller. Heavy skids enable the controller to be moved about.

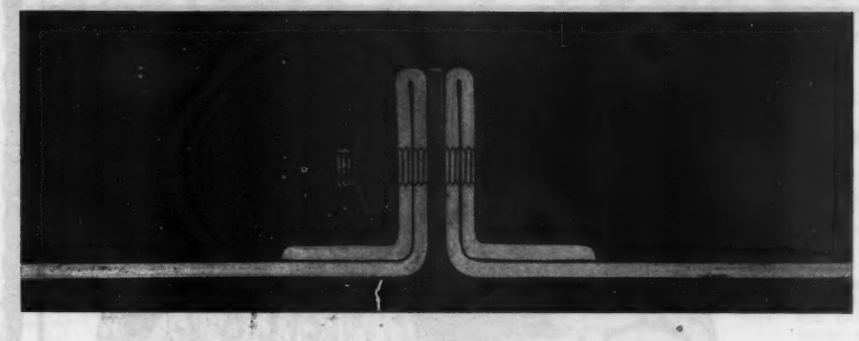
and they are mechanically interlocked to prevent closing both contactors at the same time. Seven two-pole secondary accelerating contactors and one three-pole auxiliary resistance contactor provide for speed control in either direction, giving a total of 16 points of acceleration. To increase their life and reduce maintenance costs the primary reversing contactors and the secondary accelerating contactors are provided with magnetic blowouts and arc splitters.

Current limit accelerating relays on the last four points permit maximum torque when hoisting heavy strings of drill pipe, and yet allow rapid acceleration when hoisting light loads such as running the block light. An enclosed thermal-type relay gives overload protection to the motor. By means of a safety switch, the equipment can be disconnected readily from the line during inspection or repairs. A noncorrodible, nonbreakable, edgewound strap resistor especially designed for rotary drilling service is mounted in the rear of the framework.

To permit easy and simple operation each control unit is equipped with a cam operated master switch.

FAST WORK ON TANKS

Two 10,000-bbl. A.P.I. bolted steel tanks were fabricated and delivered recently to the Tidal Oil Co., Oklahoma City, by the Columbian Steel Tank Co. of Kansas City, Mo. These were said to be the first tanks of 10,000-bbl. capacity fabricated according to A.P.I. specifications. The tanks were fabricated, set up to check accuracy of calculations, taken down and shipped, all within three days.



—4 Thicknesses *of* Metal

Plus a Special Packing in the

B.S.&B.

Perfection Vapor Pressure TANKS

Study the drawing and the actual photograph of the flange type construction of the B.S.&.B. PERFECTION Tanks.

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Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

SEISMOGRAPH IN OIL FINDING

The subjoined communication from Dr. Donald C. Barton, geologist and geophysicist of Houston, Tex., was written in response to a request from this department for the story of the development of the seismograph's use in geophysical prospecting. Doctor Barton's high standing in this field is recognized by readers of The Oil and Gas Journal and his statements are accepted as authoritative.

"The present extensive application of the seismic method of geophysical prospecting practically is an outgrowth of the work and studies of Prof. L. Mintrop at the Seismological Institute at the University of Gottingen. As a student of Wicker long before the war, he was studying the seismographic effect of artificial vibrations. His seismic method evolved from those studies and in 1919 he received a basic German patent, since revoked, covering the application of the seismic method to the working of local geological structure. His development of the seismic method of working local geological structure is antedated by the work of Fessenden, who in 1913 in a series of field experiments near Framingham, Mass., developed the instrument and technique to a point of practical applicability and patented his method.

"As Fessenden was interested in many other more important inventions and as he was unable to interest commercial mining companies in it, his method was not applied except in his experimental work on it. In 1921 Eckhart, Haseman, Karcher and McCollum started serious exploration with the seismic method in Oklahoma. Their results then seemed rather negative and their experimental work did not culminate in a successful application of the method until it had been established in this country by Mintrop.

"In the early summer of 1923 the Royal Dutch Shell brought Mintrop's consulting company, Seismos, to Mexico, and in the late summer or autumn of the same year, the Marland Oil Co. brought Seismos into Oklahoma and into the fault line district north of Powell and in the spring of the following year into the Gulf Coast salt dome district of Texas. The Gulf Production Co. also commenced the use of Seismos in the Gulf Coast salt dome district in the summer of 1924.

"The discovery of the Orchard and Long Point salt domes late in 1924 by a Seismos troop working for the Gulf Production Co. gave great impetus to the use of the seismic method. The present extensive use of the method in this country really dates from those two discoveries which proved to the American oil men the great possibilities of the method. McCollum, Eckhart and Karcher picked up their exploration with the seismic method and by the spring of 1926 had perfected seismographs of varying degrees of field worthiness and of varying types, mostly quite different from Mintrop's mechanical seismograph.

"In 1926 or 1927 the Geophysical Research Corp., which was specializing in the seismic method under Karcher, became aware of potential patent conflicts with the Fessenden patent, obtained licenses under it, and tried out the Fessenden method, but at present their working method and the methods used by other American companies largely follow the fundamental method developed originally by Mintrop.

"In some of the details of the accessories and in the construction of the American instruments, features are incorporated which may be traced to developments during the World War possibly in part under the National Research Council, but the present extensive application of the seismic method by American oil companies is a direct outgrowth of the work of Mintrop's consulting company, Seismos, in the Gulf Coast in 1924 and the years following."

LATHE CUTTINGS FOR PLUGS

I have been told that water can be plugged off in a hole by the use of lathe cuttings. Is this method of plugging off to be commended? I would like to know how a plug is formed with these cuttings. Is there any reason for using this method in preference to others? Can the method be used in any field?—D. N. E.

In this case it is assumed that you have reference to iron cuttings, and not lead shavings, although both are made on a lathe.

However, both can be used for the same purpose, that is, to plug off bottom water in a hole that has been drilled too deep.

The iron cuttings are placed in a thin sheet iron canister about 4 feet long and nearly the diameter of the hole to be plugged, and then lowered into the hole and tamped down by the use of the tools. The amount of tamping such a plug will require depends upon the character of the hole and formation into which it is being driven.

This operation is repeated enough times to decrease the rate of flow, as checked by bailing, and it is then customary to lower a solid lead plug and drive it with the tools to cap the plug of lathe cuttings.

Lead wool or shavings of lead are used with success, first being placed in wire baskets the diameter of the hole and several feet long. When lowered to the bottom of the hole they are tamped into place by the cable tools much as the iron cuttings are.

This lead plug is usually capped with one of cement. The method has been used successfully in shutting off bottom hole water that was flowing into the well at the rate of 5,000 bbls. a day with a gauge pressure of over 150 pounds per square inch at the casinghead.

However, these methods are giving place to the use of cement exclusively for plugging bottom hole water and the cement is placed by pumping in through tubing, or by dumping with a bailer.

The Portland Cement Association has prepared information about the use of cement in oil wells and it can be obtained by writing the association at 33 West Grand Avenue, Chicago.

WHY WAS IT CALLED THAT?

HOG STILL

This refinery colloquialism, now seldom heard, was applied to a simple form of tower still in which the very light fractions only, such as gasoline, were separated by the use of steam. The name may have been suggested by its fancied resemblance to the big cask, or hogshead, into which slaughtered hogs were thrust to loosen their bristles in steaming-hot water.

TEST TUBE READINGS

I would like to have your help concerning the reading of cubic centimeter test tubes which are used in the field by gaugers and producers in grinding out samples of oil for b.s. content. I notice all do not agree on the reading of these glasses. Some contend that the first mark from the bottom of the glass indicates one-quarter per cent, while others contend that it is 1 per cent.—F. R. K.

There are several types of centrifuge test tubes on the market. You do not say which type you have in mind, but it is assumed that you refer to the kind which has a graduation marked "one-half" at the bottom, with successive marks above it from 1 to 15.

On this type of tube the lowest graduation mark designates one-half cubic centimeter, and as one cubic centimeter equals 6⅔ per cent of the total contents of the tube up to the top graduation, or 15 cubic centimeters, this lowest mark (that is, "one-half") would represent one-half of 6⅔ per cent, or 3⅓ per cent. The subjoined table, based on a copyrighted chart provided by the Refinery Supply Co., Tulsa, represents a centrifuge test tube, marked like the one you are presumed to refer to and shows the percentages opposite each graduation mark. The smaller percentages not shown in the table are easily calculated by taking the proportion of the space between graduation marks occupied by the fluid and multiplying 6⅔ per cent by that proportion. Thus, if the fluid reached a point slightly higher than the "4" mark on the tube we would estimate as closely as possible the proportion of the space between the "4" and the "5" occupied. If we estimated that one-third of this space was taken, we would multiply 6⅔ per cent (.666) by one-third (.33). This would give us 2.0978. Adding this to the 26⅔ per cent (26.6666) which the table shows is the percentage equivalent of 4 cubic centimeters, we get 28.76 per cent of the 15 cubic centimeter glass.

Centimeters		Per cent	Centimeters		Per cent
— 15	=	100	— 7	=	46⅔
— 14	=	93⅓	— 6	=	40
— 13	=	86⅔	— 5	=	33⅓
— 12	=	80	— 4	=	26⅔
— 11	=	73⅓	— 3	=	20
— 10	=	66⅔	— 2	=	13⅓
— 9	=	60	— 1	=	6⅔
— 8	=	53⅓	— ½	=	3⅓

PIPE STATISTICS DESIRED

We are interested in the distribution of pipes and tubes, particularly oil country goods, and would appreciate information from you on the following:

1. The tonnage of pipes used in 1928 in drilling and equipment of wells: that is, casing, drill pipe and tubing. If it is possible, divide these figures into seamless and lapwelded. If any electrically welded pipe was used in this line of business, it will be interesting to mention.

2. Tonnage used in pipe line construction for 1928 and, if possible, for nine months of 1929. How much of electrically welded pipe has been used in these lines? What is the smallest and what is the largest diameter of these pipes?

If you do not have the figures at hand, would you kindly tell me where I could get them?—F. F. F.

Neither the manufacturers nor the consumers of casing, drill pipe and tubing provide records that would enable this department to give you figures as to tonnage used. You might obtain the information desired by addressing inquiries to the various manufacturers. No electrically welded well pipe is used. Most of it is seamless, though it is not possible to name the exact proportion. It is assumed that you have the reports of the American Iron and Steel Institute.

No statistics on tonnage used in pipe line construction in 1929 are available. As in the case of well pipe, to obtain fairly accurate figures on tonnage for 1928 it would be necessary to get information from the manufacturers, the pipe line companies or both. You can arrive at a rough approximation of the tonnage used by consulting the article, "Pipe Line Construction During 1928," on Page 309 of the pipe line number of The Oil and Gas Journal published August 29, 1929. A canvass of manufacturers or consumers, or both, would be required to tell you how much of the line pipe used was electrically welded. Most of the pipe lines constructed in the past have been from 2 to 16 inches in diameter, though 22-inch lines are laid now and 24-inch is in prospect.

The pipe line map published by the United States Bureau of Mines may be of use to you in this connection.

LITERATURE ON ROTARY BITS

Could you provide me with a bibliography on rotary bits used in oil well drilling? I am particularly interested in a bit that rotates through the force of the circulating fluid while the drill stem remains stationary, and I am under the impression that this type of bit has been developed in either Russia or Rumania.—D. C. S.

The Oil and Gas Journal of October 10, 1929, contains an article on the Russian Turbo-Roto drill which gives all the information that was obtainable from the inventor of this bit and his associates. The article does not disclose the design of the internal mechanism of this piece of drilling equipment, that information being withheld by the Russians interested for the stated reason that they were applying for patents in this country.

It is reported that the drills of this type thus far used have been for the most part 24 to 36 inches in diameter and that the problem of making the smaller sizes work effectively remains to be solved.

No bibliography on this subject is available, but the advertising index of The Oil and Gas Journal gives the names of manufacturers of rotary bits.

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Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

THEORIES FOR ACTION OF KNOCK INHIBITORS

I have heard several different theories that have been suggested for the explanation of the action of antiknock substances and would like to have a list of these if you can furnish it?—E. F. H.

The various efforts that have been made to explain the behavior of knock inhibitors include the following: Peroxide formation; protective film; incomplete combustion; catalytic poisoning; absorption or resistance.

The explosive character of the organic peroxides suggests knocking is caused by the formation of these substances from the fuel and the antiknock compound is supposed to stop or retard their formation. The presence of peroxides under operating conditions has been reported by several investigators.

The protective film theory assumes that the inhibitor has a tendency to cover the reacting substances which are thought to accelerate decomposition in a manner similar to that of a catalyst. A particle of one substance or a group of substances may hasten the formation of other substances and the inhibiting material is regarded as building a film, either of the same material or something that is formed from it, around the reacting molecules. The suggestion has been advanced that in the use of ethyl lead a film of the metal is formed around some of the hydrocarbons, or the initial products of decomposition, and so causes a separation to retard the action.

The exceptionally high heating power of gasoline has caused many scientists to believe that when the combustion is once started that the heat causes partial combustion of some surrounding particles.

Some scientists believe that the inhibiting substances function by virtue of the fact that they decompose under the influence of the high temperature and then the high heat of combustion of these products cause partial or incomplete combustion of adjoining portions of the gasoline vapor. These partially consumed particles tend to reduce the velocity of the flame and as a consequence the knocking is stopped or reduced.

An inhibitor may be regarded as the opposite to a catalyst and there are many substances which, when used in very small quantities, retard and stop such action; the substances that have this property are called catalytic poisons. The antiknock materials are considered by some investigators to poison those particles of the hydrocarbons which have a catalytic influence. The result of this is the retarding of flame advancement or knock suspension.

Several authorities have suggested that the inhibitor has the power to absorb or resist the force of the hot molecules which convey the detonation through the reacting zone. This opposition functions, in other words, in a way similar to a cushion or fender.

PHYSIOLOGICAL PROPERTIES OF KEROSENE

Kerosene has been used by some of our men for treating colds and throat troubles, about a spoonful being taken at night. Is there any medicinal value to kerosene or is it liable to give trouble when taken internally because of any poisonous qualities?—R. P. H.

Kerosene is what may be termed an old-fashioned remedy for some forms of sore throats and colds which is considered to have some merit when taken internally in small quantities such as a teaspoonful to a tablespoonful.

The heavier petroleum products do not combine with other substances under normal conditions, consequently there can be no combination with the body fluids to produce a truly toxic state. The ill effects of large quantities of the liquid products, such as kerosene, when taken internally are thought to be the result of excluding the required or normal quantity of air from the system and possibly some solvent action on the fats distributed about the vital organs. Some grades of kerosene might give some discomfort because of certain impurities which have not been completely removed during the refining process; these are mainly sulphur derivatives. When comparatively large quantities of kerosene are taken into the system, it has been known to cause death, but the fatal dose, about a pint and a half, is so large that it would seem that nobody could drink that quantity unless it were mixed with something to thoroughly disguise the taste.

A recent Associated Press dispatch from Auckland, New Zealand, states that kerosene injections have been used as a treatment for cancer in the Auckland hospital.

A resident of Frankton was brought to the hospital two years ago suffering from what the hospital authorities diagnosed as cancer. He was given the kerosene treatment for a year and discharged, apparently cured. Since then, the doctors report, there has been no recurrence of the disease, and a recent examination by the health department revealed only a cavity where the growth existed.

The kerosene was injected at a high temperature. The process was unpleasant and painful, but the doctors believe that the cure was worth the trials of the treatment.

PECOS OIL REFINING VALUE

This company has properties in Pecos County, Tex., producing oil similar to the Yates Pool oil. We are interested in determining the refinery value, that is the yield and quality of products, of the Yates oil for the purpose of comparing it with our oil. I believe there was an article in The Oil and Gas Journal about two years ago on this subject; however, I have not been able to find it. I would appreciate it very much if you could give me a list of references pertaining to this subject.—W. P.

There was an article Refining of West Texas Crude Oil, by C. K. Francis, in The Oil and Gas Journal, November 17, 1927, page 40, which reported analyses of three samples of oil from Pecos County, one of which was from the Yates Pool.

The oil from the Yates Pool tested as follows:

		Per cent
Gravity		28.9
Sulphur		2.27
Gasoline	Gr. 54.7	21.0
Kerosene	Gr. 38.8	17.4
Gas oil	Gr. 29.5	8.7

The analyses of the other two samples from Pecos County follow:

	Per cent	
Gravity	30.1	30.0
Sulphur	2.4	1.56
Cold test	15	0
B.s. and water	0.2	0.1
Color	Dark green	Black

	Per cent	
Gasoline 437 endpoint	29.0	26.4
Kerosene, 41 gravity	6.0	5.3
Gas oil, 33 gravity	28.5	26.0
Fuel oil 18-26 gravity	34.0	39.3
Loss	2.5	3.0

When refining oil of this character there should be a cracking unit; because of the large quantity of gas oil and fuel oil if these products were cracked there would be an appreciable increase in the yield of gasoline. A conservative estimate is that these would yield from 30 to 50 per cent gasoline. This is equivalent to a total yield from the crude of approximately a minimum of 45 per cent and possibly a high yield of 58 per cent.

Other references to oil of this section may be found on this page of the issues of November 17, 1927, and January 12, 1928. See also Comparison of Mid-Continent Crudes, by Sidney Born, The Oil and Gas Journal, March 21, 1929, page 34.

PRODUCTS FROM REFINERY GAS

What products is it possible to make from refinery gas and what part of the gas is used for making such products?—A. B. M.

No definite statement as to quantity and quality of the gas made in the refining of petroleum is possible. The larger volumes are obtained in the cracking operation, and especially from units of the vapor phase type. The composition of the charging stock, temperatures used, period of heating, and pressures are the important factors.

The unsaturated hydrocarbons, which may constitute 50 per cent of the gas formed in a cracking still, are considered to be the most favorable for the preparation of the synthetic products. The specific nature of these may vary. The unsaturated hydrocarbons present in the gas from a cracking still are given by Doctor Dunstan in a lecture, "Scientific Foundation of the Petroleum Industry, Royal Society," on a percentage basis—Ethylene 54, propylene 28, butylene 9, amylene 1.7, other olefins 6.1, butadiene 1.2.

The chief products made at present are the secondary and tertiary alcohols. Ordinary alcohol does not appear to have been made commercially from ethylene, although methods have been proposed. However, it has been stated that alcohols as high as decyl alcohol will be soon on the market in reasonable quantities. The secondary and tertiary alcohols are said to be very valuable solvents, the latter being soluble in water in all proportions and quite inert to oxidizing agents. Isoproply alcohol is finding use as an antiseptic capable of replacing ethyl alcohol; it is not corrosive and is a stronger germicide than ethyl alcohol. The glycols are compounds intermediate between glycerol and alcohol; they share with glycerol the properties of mixing with water in all proportions and of having little, if any, effect on rubber. Like glycerol also, they lower the freezing point of water and, therefore, are ideal for use in radiators of automobiles as "antifreeze" compounds. A 10 per cent glycol solution freezes at —18.4° F. Chlorhydrins, obtained by the interaction of the olefins and dilute hypochlorous acid, find use as solvents in industry both as such, and as chlorhydrin esters. Diethylene glycol is a colorless, odorless liquid boiling at 473° F. It is considerably more hygroscopic than glycerin, and for this reason it has been used in the manufacture of composition cork and parchment paper that must be kept pliable for a long period of time. It has also been used as a lubricant in the spinning of textiles. Unlike glycerin, it is an excellent solvent and will dissolve nitrocellulose, resins and many organic liquids. It may be used as the starting point for the production of glycol monoethyl ether, a nitrocellulose solvent or glycol dinitrate, which is an explosive, replacing nitroglycerin because of its lower freezing point and greater resistance to shock.

STEELS FOR HIGH PRESSURES AND TEMPERATURES

What is the composition of austenitic steel which is being mentioned as suitable for high pressure and high temperature Stills and other equipment.—C. R. Mc.

The kind of steel which contains appreciable quantities of added metals, such as nickel and chromium, and which have been subjected to special heat treatment are called alloy steels. Many articles have been written about these steels and a recent discussion by Spring and Kanter, "Steels Available for High Pressures and Temperatures," Power, May 28, 1929, Page 904, gives the details of general classification.

Alloy steels that have been introduced for high temperature service are generally regarded as falling into two general classifications—those which are responsive to heat treatment and have critical transformations, and those which are nonmagnetic or only feebly responsive to heat treatment. The former are termed "alpha" or "martensitic," on account of the metallographic and crystal structures. The high nickel, high chromium iron alloys are known as "austenitic." At the present time there seems to be some doubt as to the suitability of any material of the "alpha" type as an alloy for service at temperatures over 1,000° F. For high temperature service some of the more or less available steels of the "austenitic" type are likely to give the best economic service as they tend to retain their good qualities in continuous service.

Even stainless steels containing 18 per cent chromium have not proved satisfactory for superheater tubes and in cracking service. For withstanding temperatures of 1,000° F. and upwards, austenitic nickel-chromium steels are more suitable. Steels of this series contain anywhere from 8 to 60 per cent nickel and 8 to 20 per cent chromium and usually not over 0.2 per cent carbon. They have a hardness not exceeding about 200 Brinnell; their tensile strength is in the neighborhood of 100,000 pounds per square inch, and yield point 40,000 to 50,000 pounds per square inch, with 40 to 50 per cent elongation in 2 inches; they respond only feebly to heat treatment. According to the authors, these materials form a decidedly superior class of metals in strength, scaling resistance, and in general mechanical and chemical stability at red heat temperatures. An alloy steel of this sort widely adopted for tubes at steam power plants and oil refineries contains 8-9 per cent nickel, 18-20 per cent chromium, 0.5-0.15 per cent carbon.

World Co-operation Also Needed

By W. T. ANDERSON

The interest of American oil men in the world oil industry can best be measured by the simple statement that the United States furnishes 48 per cent of the gasoline consumed in the rest of the globe.

World consumption of gasoline is estimated at almost 500,000,000 bbls. a year. This year's consumption in the United States will be around 375,000,000 bbls., which means that the consumption in the rest of the world will be about 125,000,000 bbls., of which about 60,000,000 bbls. will come from the United States.

American petroleum exports account for about 14 per cent of our total gasoline production, 35 per cent of our kerosene output, 32 per cent of our lubricating oil and 35 per cent of our petroleum wax production.

These figures are of importance in considering the address of Sir Henri Deterding on the world oil outlook at the meeting of the American Petroleum Institute at Chicago.

Plainly Sir Henri had the world's oil markets chiefly in mind, and the effect of the competition of American overproduction abroad. Conservation, as he viewed it, would take into consideration the wisdom of dumping excess production abroad and how long that excess would last. Overexporting from the States, he said, was simply pulling down our own market against ourselves.

He stressed two effects abroad, warning that "logical government protection against cheap dumped imports is a certain event" and the necessity of foreign consumers protecting themselves for future needs seeing that "continuation of exports from America is simply a temporary dumping of excess production."

It may be recalled that plans to stabilize the foreign market went astray last year and that Sir Henri was quoted as saying it was impractical to improve prices abroad so long as overproduction continued in America.

The American viewpoint may be somewhat different in regard to lasting supply. There does not appear to be any present reason to fear that we shall not be able to supply our foreign customers for many years.

We have built up that trade to the extent of supplying 48 per cent of the gasoline consumed in the rest of the world and cannot reasonably be expected to surrender that, even if foreign producers were able to supply it.

Now that we have effected stabilization of production with demand that can no longer be argued against stabilization of the markets for products abroad.

There is no desire in this country to dump cheap products abroad. We would be glad if the standards of living abroad were as high as our own because it would mean so much greater markets for everybody.

The fact remains that oil is worth more than it costs, measured in service to the consumer. The record proves it to have been less before the war, through the war and since, compared to all commodities.

It has been cheapened only by overproduction and overcompetition regardless of costs.

That is a situation that can be remedied only by removal of the causes and that can be attained only by the co-operation of the whole world industry.

Sir Henri has suggested the creation of "an association of co-operation on the basis of possibility of permanent production."

Permanent production would mean a production that would be constant with demand, getting away from these recurring periods of overproduction that demoralize the world markets.

If co-operation among American producers of crude can stabilize supply with demand there should be no reason why manufacturers could not similarly stabilize production and consumption.

On that basis American operators could fairly ask the co-operation of their leading competitors abroad for the common welfare of the entire industry.

Without that co-operation there can be no assurance of stability and the industry must continue to sacrifice its profits and its products in an empty competition for losses.

Sir Henri has spoken of the possibility of the exhaustion of American oil, which seems to have been a favorite topic among producers abroad for many years.

American producers, contemplating the price range and the potential fields, are less worried over that than overproduction.

But it is not to be expected that American oil companies with their great investments have not been as foresighted in this regard as their competitors. The recent acquisition of the rights to the hydrogenation process and its application to oil was an example of American preparedness for any eventuality.

It was indeed more immediate than that because it can be called into play long before there is any threat of exhaustion of our oil and in fact can be and will be used to postpone that indefinitely.

Predictions of exhaustion have never taken into account the possibilities of constantly increasing recovery of gasoline, thereby keeping down the requirements for crude. The development of cracking and the improvements in natural gasoline manufacture have immensely lengthened our use of oil and the hydrogenation process will do it much more.

In addition we have unlimited resources for raw material in our shale oil and coal reserves. Investigations under way may change our present conception of what constitutes suitable motor fuel.

With all this development it could not be expected that America would restrict itself to the domestic oil market any more than to the domestic market in any other line of manufacture. Our oil exports have indeed become the second largest item in our foreign trade, amounting to $525,500,000 in 1928 against $920,000,000 for exports of unmanufactured cotton, the leading item.

In view of the developments in the American oil industry in the past five or ten years it would be absurd to base our present business on a possibility of a future condition that may never be encountered.

Gas gathering line of Naylor Pipe in service at the Gypsy Oil Co., Maud, Oklahoma. 40'0" joints, 16" diameter.

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line It can crack gas oil or other light fractions, too, if sales conditions make that desirable

The Dubbs process will do these things at a bigger profit to the refiner than any other method of operation

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Following the Drill Around the World

Methods of Operating in Foreign Countries, Depths of Wells, Rates of Flow and Development Policies

Drilling methods in foreign fields, data about rate of flow, depths of wells, spacing and general development policies are described in the following article specially prepared for the world issue of The Oil and Gas Journal.

VENEZUELA

It is impossible to generalize, with any degree of accuracy, concerning either the initial rates of flow or the "average" depths of producing wells in Venezuela. In the same field, according to official reports, wells have been brought in within a month of each other, with initial rates of flow, respectively, 12.1 metric tons and 163.9 metric tons, daily. In another field, a well was completed with an initial flow of 216 tons daily and near it, exactly one month later, a well was brought in with a rate of 72 metric tons a day.

An analysis of 310 producing wells, whose initial rates of flow were reported, gives the following result:

Initial Rate	No. of Wells
Under 50 metric tons	93
50-100 metric tons	41
100-150 metric tons	16
150-200 metric tons	19
200-250 metric tons	32
250-300 metric tons	22
300-350 metric tons	13
350-400 metric tons	18
400-450 metric tons	9
450-500 metric tons	8
500-550 metric tons	12
550-600 metric tons	8
600-650 metric tons	5
650-700 metric tons	1
700-750 metric tons	4
850-900 metric tons	5
950-1,000 metric tons	2
1,461 metric tons	1
1,580 metric tons	1
	310

In 269 active producing wells, whose depths have been reported, there are similarly wide divergencies. The shallowest are from 285 to 300 meters deep, although these are not among the most important as producers. The principal producing companies, according to their reports to the Venezuelan Government, have commercially productive wells at depths ranging from 433 meters (Iinitial production, 95 metric tons), and 489 meters (964.4 tons), to 1,223 meters (241 tons). Two wells were being drilled, one of them at a depth of 1,303 meters and the other at 1,523 meters. The depths of the 269 wells mentioned are distributed as follows:

Depth	No. of Wells
433 meters	1
489 meters	1
500-600 meters	2
600-700 meters	36
700-800 meters	61
800-900 meters	55
900-1,000 meters	32
1,000-1,100 meters	56
1,100-1,200 meters	23
1,200-1,300 meters	2
	269

Policy on Well Spacing

After a brief period of competitive drilling in the early stages of petroleum exploitation in Venezuela, the companies operating in the same adjacent fields found it advisable to enter into mutual signed agreements concerning the spacing of wells. This policy has been followed ever since, in every case where a conflict of interests might be involved. These agreements provide for a minimum spacing of 86 meters between wells of different companies. In granting exploitation concessions, the Government specifies that no drilling may be done within 35 meters of their boundary lines, but there never has been any necessity for enforcing this provision. It is uncertain whether it could be enforced in all instances, for it is believed some of the concessions granted have measured less than 70 meters between opposite boundaries.

While no exact figures on the subject are available, it is estimated that from 90 to 95 per cent of the existing producing wells have been sunk by rotary drills. The principal producing companies use the rotary method almost exclusively except in isolated instances where the nature of the ground may require the use of cable tools. One company that has been conducting extensive operations in previous years, using cable tools for the most part, is now switching over to rotary drills. The rotary method, as a rule, now is being used even for shallow geologic tests.

Steam is generally used as oil field power. Employment of electricity for this purpose is virtually unknown in Venezuela. One company which utilizes the natural gas produced in its operations, employs this power for some of its field work. Gasoline engines have been introduced in a few instances, without much success.

Free Flowing Wells

According to authoritative unofficial estimates, free flowing wells produce from 80 to 90 per cent of the petroleum being exploited in Venezuela. It cannot be said that as high a percentage of the total producing wells are free flowing but most of the producers brought in are probably still operating without the use of pumps.

The use of "gas lift" to stimulate production is steadily increasing. One of the most important companies already is using it extensively while with others it is in more of an experimental stage. All are making a close study of the development of the method and, aside from the company mentioned, another has an expert on its field staff whose exclusive task is to introduce the "gas lift" where it can be used to advantage.

Natural Gas Industry

The two important producing companies of the Royal Dutch-Shell interests in Venezuela are the only ones that have taken advantage of the possibilities for the production of natural gas in their petroleum operations. According to an official report to the Government by one of these companies, the Caribbean Petroleum Co., gas obtained by its plant since 1922, has been as follows:

Year	Nat. Gas (Metric Tons)
1922	1,177,383
1923	13,678,880
1924	12,336,127
1925	27,759,743
1926	41,452,992
1927	97,261,245
Total (6 years)	193,666,370

The other company mentioned, the

(Continued on Page 236)

Distribution of Venezuelan Crude

Approximately 50 Per Cent Exported to United States in 1928 With Nearly as Much Retained for Local Refineries

By Special Correspondent

Through its spectacular increase in production during the past three years, Venezuela has consolidated its position as the second largest oil producing country in the world. In less than two decades, Venezuela has attained an annual production figure of approximately 137,000,000 bbls., a figure which was reached in the United States only after nearly fifty years of exploration and drilling.

Large quantities of Venzuelan crude have been imported into the United States, being received primarily at certain of the Atlantic Coast refineries. In a general way, the increased shipments of Venzuelan crude to the United States have compensated for the decrease in receipts of Mexican crude which followed the decline in Mexican production. At the same time, an increasing refinery capacity, both within the national boundaries of Venezuela and on the neighboring Dutch islands of Curacao and Aruba, has created a regional demand for crude oil which is equal to, or probably slightly greater than, the export demand. The increased processing of local crude within the Caribbean area has also resulted in a larger output of refinery products which has, to some degree, modified the export demand for refined products from the United States.

Where Crude Exports Go

Official Venezuelan figures show that of the 1928 production of 105,750,000 bbls., a total quantity of 104,400,000 bbls. was exported, refined or used for fuel purposes, leaving 1,350,000 bbls as the approximate amount added to storage within the country. Total crude oil exports from Venezuela amounted to 99,046,000 bbls., of which 76,133,000 bbls were moved across to Curacao and Aruba for refining or re-exporting and 22,913,000 bbls. were shipped directly from Venezuela, through the customs districts of Amuay and Cristobel Colon, to the United States. Crude oil shipments to Germany, Colombia and Trinidad totalled less than 200 bbls.

Export figures for the Netherlands West Indies in 1928 indicate that a total quantity of 30,240,000 bbls. of crude oil was re-exported, which would indicate that a total quantity of 53,153,000 bbls. was shipped from the Caribbean region to other refining centers. This calculation shows that 51 per cent of the Venezuelan crude marketed in 1928 was actually shipped to points outside of the local region. Estimates covering 1929 indicate that, of the probable production of 137,000,000 bbls., approximately 56,000,000 bbls., or 41 per cent, will have been available for shipment outside of the area. This decrease in relative quantity available for shipment has resulted from the increased refinery capacity and resulting increased crude oil demand within the area.

Three Refineries Operated

Three refineries were operated within the national boundaries of Venezuela during 1928 and two were constructed during 1929. The largest refinery within the country is that of the Caribbean Petroleum Co., located at San Lorenza and connected by pipeline with the Mene Grande field. This refinery has a rated capacity of approximately 17,000 bbls. daily, but its throughput during 1928 averaged 10,000 bbls. daily, the total for the year being 3,661,000 bbls. The sale of 987,000 bbls. of refined products was reported to the Venezuelan government, consisting of 231,000 bbls. of gasoline; 24,000 bbls. of kerosene; 9,000 bbls. of engine oil; 17,000 bbls. of gas oil, and 706,000 bbls. of fuel oil. In addition to these sales, the company consumed a large quantity of refinery fuel oil in the operation of its lake tankers and barges.

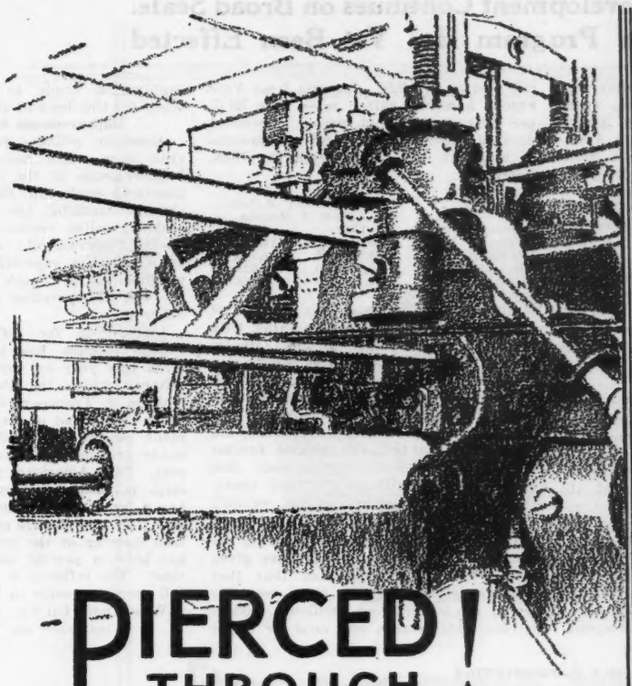
The Lago Petroleum Corp. operates a topping plant at Cabimas which is rated at 4,000 bbls. daily. The 1928 throughput was approximately 3,000 bbls daily, the total for the year being 1,179,000 bbls. The output of the refinery consisted of slightly more than a million bbls. of fuel oil, 63,000 bbls. of gasoline; 6,000 bbls. of kerosene; 15,000 bbls. of gas oil; and 4,000 bbls. of distillates. The combined runs of the two refineries totalled 4,840,000 bbls., or 4.6 per cent of the Venezuelan crude marketed. The third refinery operating in Venezuela during 1928 was that of the North Venezuelan Petroleum Co., Ltd., at El Mene, which produced 966 bbls. of gasoline and 2,514 bbls. of fuel oil, all of which was consumed by the company. The Venezuela Gulf Oil Co., in its annual report to the Venezuelan government, announced its intention of erecting an 1,800-bbl. refinery. This plant is reported to top the crude oil in order to bring the flash point of the oil down to fuel oil specifications, the resulting naphtha being mixed with the crude intended for export. The West India Oil Company also announced its plans to erect a 3,000-bbls. refinery and its intentions to market the refinery products within the country. The quantity of crude oil consumed as fuel by the oil companies was reported at 514,000 bbls.

Of the 76,133,000 bbls. of crude reported shipped to Curacao and Aruba, a large portion was moved by lake tankers to the deep sea loading station on Aruba for re-export to the United States. A smaller quantity was exported from Curacao. The combined crude oil exports of the two islands during 1928 show the shipment of 29,093,000 bbls. to the United States; 742,000 bbls. to England; 346,000 bbls. to Canada, and 58,000 bbls. to Mexico.

Recapitulation

Recapitulating the foregoing, it is indicated that 49.8 per cent of the marketed Venezuela production was shipped to the United States; 44 per cent was retained on the Islands of Curacao and Aruba, largely for refining; 4.6 per cent was refined within the national borders of Venezuela; 1.1 per cent was exported to England, Canada and Mexico; and 0.5 per cent was consumed for fuel purposes by the oil industry of Venezuela.

The refinery throughput of crude on the Islands of Curacao and Aruba was approximately equal to the 45,994,000 bbls. retained on the islands. This is indicated by a tabulation of the refined products exported from these islands during the year. Total exports from the two islands amounted to 41,748,000 bbls., of which 38,973,000 bbls. was shipped from Curacao and 2,775,000 bbls. from Aruba, according to available export data. Of the total exports, gasoline shipments amounted to 6,413,000 bbls.; kerosene, 76,000 bbls.; gas oil, 3,698,000 bbls.; fuel oil, including bunker oil loaded, 30,029,000 bbls.; lubricating oils, 965,000 bbls.; and Diesel oil, 567,000 bbls. The difference between the export total and that indicated as the quantity of crude refined may be accounted for to some extent by the local consumption, of which the consumption of fuel oil probably would be the largest item.



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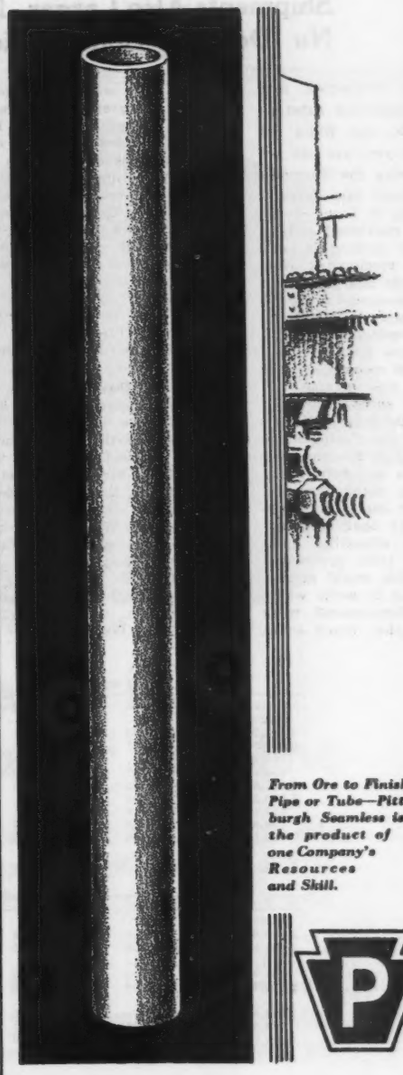

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South American Production Gains

Shipments Also Larger. Development Continues on Broad Scale. No Definite Conservation Program Has Yet Been Effected

South American oil production and shipments have both registered substantial gains during 1929, and while detailed data for the full year are not yet available, figures covering the first ten months' operations indicate that development has continued on a broad scale. The United States has continued to take the larger part of the production, and the steady growth in receipts at Gulf and Atlantic Coast ports has played an important part in the domestic crude oil situation during the year. In the Mexican fields declining production and an almost total lack of new field work on the part of the principal companies, both American and foreign, was notable.

Notwithstanding the successful application of proration to the principal United States fields during the closing quarter of the year, nothing in the shape of a definite conservation or curtailment policy has developed in South America. A number of the larger companies, with concessions so extensive that they are amply protected from offsetting, have voluntarily held down their production owing to the unfavorable world market prices for petroleum, but in areas where there is competition, development work has continued on a rather broad scale.

There is some talk of a co-operative conservation program in Venezuela, sponsored by Royal Dutch and Pan American, but it is doubtful if the other American companies operating in that country would be agreeable to any such accord at this time. Royal Dutch and Pan American, owing to their possession of large refineries adjacent to Venezuela, are at present in commanding position. Other American companies, notably Gulf Oil and Standard Oil Co. of New Jersey have been consistently strengthening their position in the production and development picture, and the outlook for 1930 indicates further expansion in that direction.

Heavier Imports

Heavier imports of South American crude oil into the United States have continued, and the South American product has reached the point where it is an important rival of domestic crude in importance on the Atlantic Seaboard. As of September 30, 1929, East Coast refinery stocks of crude oil totaled 12,547,000 bbls., of which total 3,748,000 bbls. were imported crude. Total imports of crude oil for the first nine months of 1929 showed a gain of some 3,500,000 bbls., totaling 62,727,000 bbls., against 59,349,000 bbls. in the corresponding months in 1928. Imports from Venezuela, however, gained more than 33⅓ per cent during that period. Detailed data on imports for the first nine months of the year, with comparison for 1928, follow:

Country of Origin:	Bbls. of 42 U. S. Gals. First 9 Months 1929	1928
Mexico	10,200,000	13,091,000
Venezuela	41,246,000	34,705,000
Colombia	8,913,000	9,528,000
Other countries	2,368,000	2,025,000

Thus it will be seen that imports of crude have shown appreciable gains, with the exception of shipments from Mexico and Colombia, some of the production from the latter country having been diverted to Canada. Continued heavy production and export taxes, combined with a low market for heavy oil and fuel oil, have combined to push Mexico further into the petroleum background, and nothing save continued curtailed operations appears in sight for that country during the near future.

Developments in Venezuela during the first 10 months of the year have given ample evidence of the fact that that country is actually the huge reservoir which oil leaders had predicted, and it is clear that were a real need for larger supplies of crude to arise, Venezuela could fill the demand almost overnight.

Improvements in Refining

American refiners during the current year have made material progress in improvements in the refining of South American crude, and East Coast refiners, through cracking, are getting a considerable gasoline return on their runs of South American oil. A number of new cracking units, especially adapted to the peculiarities of South American crude, are now in operation at Atlantic Coast refineries.

Interest in the refining division in South America has been largely centered this year on the new 110,000-bbl. refinery which the Pan American Petroleum & Transport Co. has constructed on the island of Aruba, D.W.I. This plant, designed to handle the Venezuelan crude production of Lago Oil & Transport, Pan American producing subsidiary, is modern in every respect, and has a large cracking installation. Crude was first run to this refinery during the first quarter of the year, and the plant has been in partial operation since that time. The refinery is expected to be in full operation early in 1930.

West India Oil Co. (Standard Oil Co.

(Continued on Page 244)

TABLE 1—PRODUCTION

BARRELS OF 42 GALLONS

	January		February		March		April		May	
	1929	1928	1929	1928	1929	1928	1929	1928	1929	1928
V. O. C.	4,103,720	1,759,764	3,607,811	2,330,636	3,790,306	2,681,571	3,894,294	2,769,311	4,021,487	3,100,677
Lago	3,347,262	2,061,117	2,957,886	1,925,604	3,223,737	2,070,568	3,195,878	1,897,110	3,165,355	2,206,387
Falcon Oil Corp.	128,709	.....	116,904	.....	.....	.....	.....	.....	.....	.....
Creole Pet. Corp.	638,630	*706,147	578,690	*791,373	536,500	*1,924,282	577,296	*855,608	582,600	*1,066,000
Gulf	1,227,605	336,182	2,345,820	758,060	2,328,800	809,058	2,612,000	659,836	2,610,100	933,997
Gulf Ven. Pet.	1,250,370	433,000	.....	.....	.....	.....	.....	.....	.....	.....
Caribbean Pet.	633,733	1,451,048	550,004	795,556	632,307	819,609	884,880	1,224,530	1,469,493	1,297,753
B. C. O., Ltd.	159,992	195,045	138,972	167,609	154,825	164,120	159,111	154,081	161,129	145,809
General Asphalt	30,500	52,000	30,000	30,000	28,000	31,500	28,000	34,000	28,000	33,500

*Gulf-Creole.

BARRELS OF 42 GALLONS

	June		July		August		Sept.		Oct.	
	1929	1928	1929	1928	1929	1928	1929	1928	1929	1928
V. O. C.	3,839,835	2,967,815	3,513,256	3,247,523	4,052,509	3,364,926	3,783,870	3,345,453	3,679,722	3,527,260
Lago	3,203,294	2,240,066	2,726,647	2,426,456	2,754,767	2,361,745	2,835,922	3,060,698	2,833,102	3,643,739
Falcon Oil Corp.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Creole Pet. Corp.	625,900	973,000	669,200	538,314	705,915	524,585	651,600	503,310	697,800	572,929
Gulf	2,637,100	836,700	2,741,200	1,522,810	2,702,385	1,572,397	2,324,200	1,449,103	2,456,400	1,713,916
Gulf Ven. Pet.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caribbean Pet.	1,598,400	1,134,270	930,000	1,486,872	961,000	1,015,219	1,521,090	941,430	1,704,380	892,428
B. C. O., Ltd.	168,930	153,224	175,051	139,566	190,867	154,180	193,500	141,509	191,890	131,316
General Asphalt	27,500	34,000	37,900	36,000	27,000	38,000	28,000	36,000	27,500	38,000

TABLE 2—SHIPMENTS

BARRELS OF 42 GALLONS

	January		February		March		April		May	
	1929	1928	1929	1928	1929	1928	1929	1928	1929	1928
Venezuelan Oil Concessions	3,536,996	1,754,537	3,360,782	2,359,427	3,629,800	2,807,420	3,170,319	2,779,049	2,983,567	3,150,207
Lago	2,434,878	1,826,003	2,258,727	1,780,544	2,180,355	1,873,173	2,427,267	1,870,816	2,801,048	2,259,056
Falcon Oil Corp.	128,709	.....	116,904	.....	.....	.....	.....	.....	.....	.....
Creole Pet. Corp.	630,000	*745,440	520,821	*818,500	471,800	*959,025	596,000	*878,640	578,000	*1,102,280
Gulf	1,180,630	357,190	2,114,000	818,500	2,428,800	723,475	2,472,000	690,360	2,484,000	832,533
Gulf-Venezuelan Pet.	1,150,370	450,370	.....	.....	.....	.....	.....	.....	.....	.....
Caribbean Pet.	748,300	1,445,820	502,186	786,476	553,983	838,580	790,223	1,191,000	1,239,165	1,014,188
B. C. O., Ltd.	144,300	205,500	128,936	166,216	144,825	154,300	177,650	138,237	161,385	118,900
General Asphalt	28,000	52,000	30,000	30,000	28,000	31,500	28,000	34,000	28,000	33,500

*Gulf-Creole.

BARRELS OF 42 GALLONS

	June		July		August		Sept.		Oct.	
	1929	1928	1929	1928	1929	1928	1929	1928	1929	1928
Venezuelan Oil Concessions	2,680,120	2,913,063	3,607,292	2,606,537	3,835,900	3,238,671	3,231,000	3,238,550	3,142,080	3,410,400
Lago	3,107,296	2,306,849	2,767,942	2,545,412	2,660,102	2,597,358	2,768,833	2,347,723	2,608,167	2,616,607
Falcon Oil Corp.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Creole Petroleum Corp.	588,000	1,049,220	658,800	616,220	614,000	524,585	738,000	500,000	729,000	597,250
Gulf	2,514,000	893,780	2,657,200	1,582,780	2,885,650	1,311,415	2,250,000	1,405,000	2,443,000	1,791,750
Gulf-Venezuelan Petroleum	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caribbean Petroleum	1,480,200	895,000	840,278	1,283,200	681,000	1,082,232	937,000	913,437	1,580,200	725,600
B. C. O., Ltd.	167,280	138,602	173,410	137,445	193,400	141,129	192,800	174,013	187,920	103,200
General Asphalt	27,500	34,000	26,000	36,000	27,000	38,000	28,000	36,000	27,500	38,000

TABLE 3—MEXICAN EXPORTS

Company—	January	February	March	April	May	June	July	August	September	*October
Mexican Eagle	813,297	395,510	742,063	730,396	851,819	714,081	571,284	399,737	684,959	661,642
Pan American	490,525	476,228	646,288	686,589	827,505	656,127	486,906	686,495	534,806	573,401
Standard Oil of New Jersey	361,965	406,336	338,059	273,223	402,972	606,066	441,607	606,442	594,610	260,851
Gulf Oil	.....	.....	.....	.....	.....	.....	.....	.....	144,064	198,611
Royal Dutch	225,023	134,997	194,760	275,756	237,624	194,156	264,662	63,602	131,280	111,228
Sinclair	30,520	52,088	148,393	139,964	380,762	301,930	304,897	207,697	184,967	104,313
The Texas Company	64,171	.....	.....	94,315	134,444	139,601	86,792	159,318	123,503	62,675
Penn Mexican Fuel	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pierce Oil	25,840	.....	.....	.....	.....	49,529	.....	.....	.....	4,444
Mexican Atlas	.....	.....	.....	71,066	73,155	.....	73,645	.....	37,662	.....
Empire Gas & Fuel	115,994	.....	141,541	42,273	59,212	70,834	204,034	66,609	109,409	.....
Miscellaneous	65,845	68,335	.....	50,694	.....	114,415	.....	38,812	40,636	.....
Gulf Coast Corp.	67,473	.....	.....	.....	.....	.....	62,305	67,622	.....	.....
Total	2,260,653	1,533,494	2,211,104	2,364,276	2,967,493	2,846,739	2,496,132	2,296,334	2,585,896	1,977,166

*Last available statistics.

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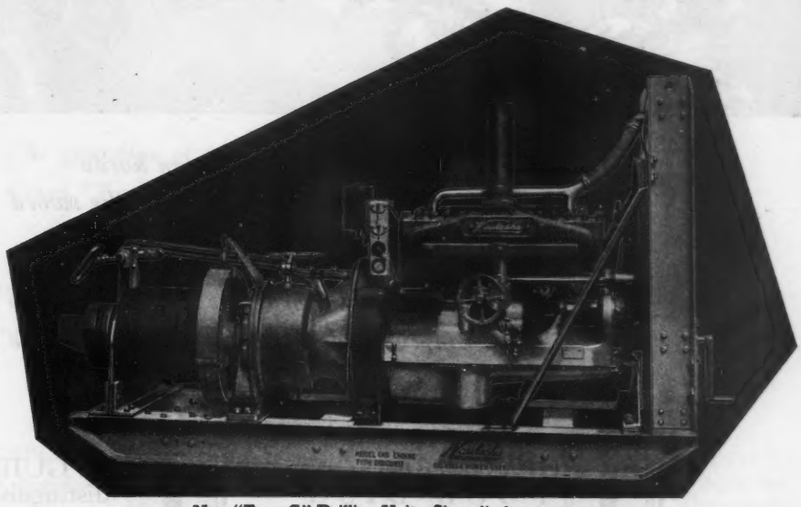

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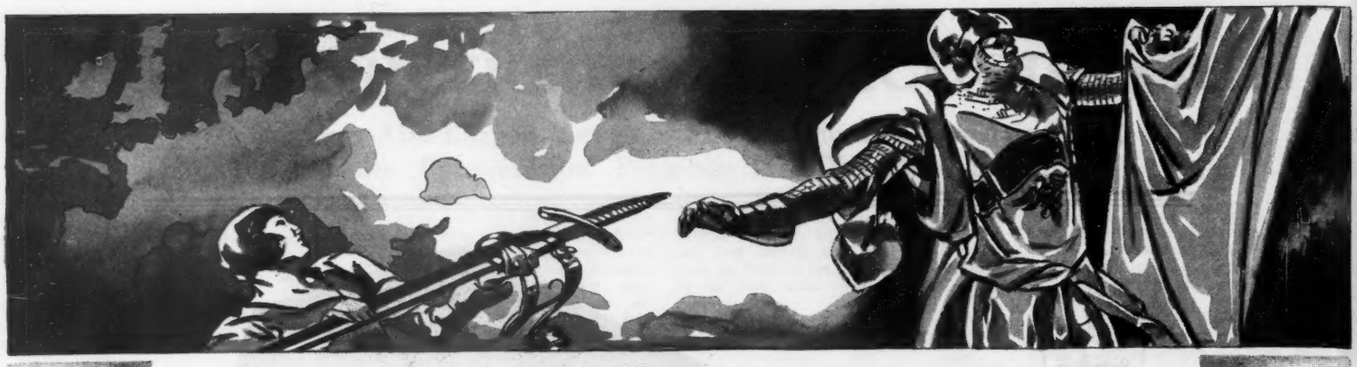
WAUKESHA ENGINES



Progress calls for tools; the pagan horde
Was turned back by that tool of war, the sword

The herald of progress sees new gaps to span;
Empty handed he cannot, with tools he can.

THE GUIBERSON FOUR-DISC REAMING ROTARY BIT cuts through soft or semi-hard formations with amazing speed and will also cut through intervening rock shells without the necessity of pulling out to change bits. Four discs cut up material more finely, at the bottom of the well, making it easier to flush from well. Two inner discs also cut up the core that gives trouble with a two-disc bit, impeding free roll and wearing cutters flat. Side plates have reamers, reaming hole full size as cutters wear down. No need to ream further. Water flush holes extend to bottom of bit, discharging water at exactly the right point. The Guiberson Disc Bit cuts a straight hole, in one case varying hardly a fraction of an inch in over two thousand feet. The Guiberson Disc Bit can be used wherever fish-tail or other disc bits are used and in many places where their use is not now economical.

THE GUIBERSON TUBING CATCHER is a piece of safety equipment used to prevent damage to tubing from droppage. The standard practice is to run the Tubing Catcher near the lower end of the string of tubing, where it hangs free from the casing until an accident occurs, causing the tubing to drop. Then the Tubing Catcher functions, gripping the casing walls, thereby preventing the tubing from dropping to the bottom of the well and corkscrewing. This operation takes place within three inches, every Catcher being tested in an empty casing, stopping its own weight, before it can leave the factory. The spring is especially strong, operating with or without fluid in the hole, and the weight is heavily built, to overcome the retarding action of mud or paraffin. Dove tail tracks keep the slips in perfect alignment and guide them instantly and accurately to where they grip the casing walls. The Guiberson Tubing Catcher gives positive protection against damage to tubing from droppage.

THE GUIBERSON SWAB is distinguished chiefly for its utilization of fluid pressure to perfect the operation of the swab. The heavier the column of fluid, the more forcefully are the edges of the cups pressed against the casing walls, completely sealing up the load while lifting fluid out of the hole. On the trip down, however, all pressure against the under side of the cups tends to collapse them, giving the Guiberson Swab extremely speedy passage into the hole. Flexible cups also pass projections occurring in partially collapsed or dented casing without sticking and without losing any of the load. Imbedded guide wires steer cup rims safely past damaging projections. The same diameter cups, due again to their flexibility, will operate in two sizes of casing. They will not wear out the casing, while at the same time always preserving a firm seal for lifting the fluid. The Guiberson Swab is doing most of the world's swabbing today.

GUIBERSON

BETTER BE SAFE THAN SORRY

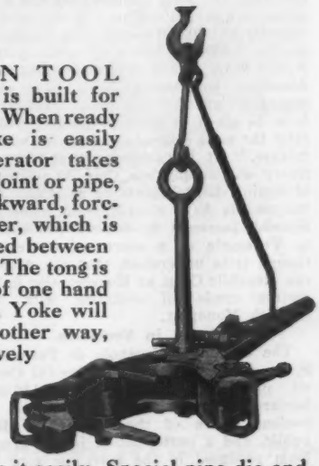
The guardian of progress, whom we near exhaust,
Cries, "Tools to work with, tools, or I am lost!"

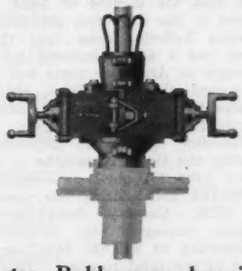
Servants of progress, strong and loyal bands,
Need tools to supplement their willing hands.

THE GUIBERSON UNDERREAMER is now popularly described as: "Rigid as a drilling bit." Mechanical perfection is the reason,—also responsible for the fact that the Guiberson Underreamer will stand a longer and faster stroke day after day and week after week without developing any of the characteristic underreamer weaknesses. The cutters taper into the body with a dove-tail fit, secured by both bolt and mandrel. Three times more down-thrust bearing surface is provided. High tension spring snaps cutters to their seats from collapsed position. Head and tongue are forged from solid steel billet, so insides positively cannot pull out. Cutters are oversize and may be dressed many times. Patented dressing form provides for speedy and accurate dressing. The Guiberson Underreamer is an easy holder of the title as "The World's Strongest Underreamer."

THE GUIBERSON CONTROL HEAD PACKER answers the need for an all purpose packer to be run in flowing wells against heavy pressures. The use of this packer confines the flow to the tubing, eliminating the depletion of gas pressure and shortened flow which invariably result from allowing the well to flow haphazardly through the casing. Flowing through the tubing also maintains the surface pressure in the well, preserving the gravity of the oil. The Guiberson Control Head Packer is easily set and may be re-set higher or lower, as desired, just as easily. It can be pulled out at will, with no swabbing effect, even after long service in the well. The Tubing Oil Saver is recommended for use with this packer when it is to be set in a flowing well.

THE GUIBERSON TOOL JOINT TONG is built for automatic action. When ready to use, the yoke is easily swung open, operator takes hold of end of handle, stabs the tool joint or pipe, which drives the projecting ears backward, forcing the yoke to enter the latch lever, which is held firmly by a spring placed between the latch lever and the frame. The tong is opened easily by a pressure of one hand on the end of the latch lever. Yoke will not come unlatched in any other way, however, remaining positively closed at all times. Tong is reversed without taking from the joint and without turning over. Is perfectly balanced and one man handles it easily. Special pipe die and interchangeable yoke make it instantly convertible into drill pipe tong. Patented, two-hole cam die gives ample take-up. Only five main parts, each exceptionally strong.





THE GUIBERSON TUBING OIL SAVER is designed for attaching to the casing heads of flowing wells, to prevent the loss of oil while running the tubing. Rubbers permit passage of tubing collars readily, yet provide tight seal against escape of oil and gas. Rubbers can be withdrawn into recesses to permit passage of Tubing Catcher, Control Head Packer, etc. All parts are made in two sections, so saver can be placed around tubing at any time. Its ability to withstand heavy pressures makes it especially valuable for use with Control Head Packer when running in against heavy flows.

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GUIBERSON

BETTER BE SAFE THAN SORRY

Gain in Refinery Activities Abroad

Feature of Year in Foreign Countries Anxious to Assure Their Own Supply of Petroleum Products

By John H. Nelson

In Spain in January, 1928, the Compania Arrendataria del Monopolio de Petroleos, S. A. (the holders of the monopoly) expropriated all American and foreign petroleum property, and assumed complete control of importations, storage, transportation and sale of all liquid minerals combustible and their derivatives. One of the stipulations in granting the concession was that the concessionary should establish gradually a refining industry that within five years would produce 80 per cent of the refined petroleum requirements of the country.

Consideration has been given to this matter for some time, and the location of three plants in northern, southern and eastern Spain, respectively, has been regarded as the objective toward which the monopoly would work. The first plant to be constructed will apparently be in the free zone of Barcelona. This construction has been approved by the government and the refinery is to have a capacity of 200,000 metric tons (approximately 1,400,000 bbls.) of crude petroleum a year. While it is understood that American engineering firms have submitted designs for this plant, preference is to be given to those proposals "which offer the most elements of Spanish manufacture." It is calculated that this refinery will supply less than 30 per cent of Spain's 1928 imports of gasoline. Arrangements have already been made by Spanish interests to acquire production in Venezuela as a source of crude, although it is understood that the American Republic Corp. at Houston also holds certain crude oil contracts with the Spanish Monopoly.

Interest in Venezuela

The Compania Espanola de Petroleos, S. A., acquired from the Falcon Oil Corp. oil properties amounting to 156,000 hectares near Lake Maracaibo and in various states of the Venezuelan Republic, and a participation in the petroleum produced in the maritime zone of Maracaibo by the Lago Petroleum Corp. This participation will amount to 5 per cent annually, the agreement with the Lago Petroleum Corp. being that this participation shall be had until 1963. As 5 per cent of the 1928 production of oil of the aforementioned corporation amounted to 1,186,000 bbls., and production in the first six months of 1929 amounted to 720,000 bbls., it is estimated that the Compania Espanola de Petroleos, S. A., will obtain from source alone more than 1,000,000 bbls. of oil which it will have available for the Spanish market and which will bring the company approximately 7,900,000 pesetas.

It is also understood that the recently announced 10,000-bbl. a day refinery to be constructed in Venezuela by the Southwestern Engineering Corp. for the Venezuelan Royalties Co. will enjoy certain contracts with Spanish and French markets.

Proposed Refinery in Colombia

While a government refinery in Colombia to handle the government's royalty crude has been proposed from time to time, no definite action has been taken, although it is understood that arrangements to finance such an operation have recently been completed in the United States and further negotiations are in progress.

Such a refinery would probably have a capacity of 6,000 to 10,000 bbls. a day, be located on the coast in the vicinity of Cartagena and require crude oil in addition to that now accredited as royalty oil for efficient and economical operation.

Another factor in the Colombian situation is that the domestic market is so limited and at present supplied from the Tropical Oil Co.'s plant near Bogota that a refinery of the above capacity would necessarily have to move its finished products in the export trade, and these markets are already in the hands of strong interests. Unless some arrangement with French, Spanish or other European interests similar to the Venezuelan arrangements are made nationalization or a state sales monopoly would be necessary to supply a domestic market.

Three Projects in Uruguay

Three projects are reported to be on foot in Uruguay for petroleum refineries. The Sociedad Uruguaya de Combustibles S. S. has been formed at Montevideo for the importantion, exportation, purchase, sale, distillation and refining of crude petroleum and its derivatives. This company is to operate 40 years under its present regulations and may establish branches in other parts of the country.

At Rocha a group is reported to be considering establishment of a petroleum refinery, but no definite data are available.

Early in August there was submitted a project of law to establish a national petroleum refinery with the object of reducing the value of imports on combustibles. The strong point of this plan is in the contrast between the prices paid for imported gasoline and kerosene and that for imported crude. This is offset by the expense of construction of a refinery and the reduction of national revenue from import duties.

The president of Uruguay has disapproved the resolution of the national council of the administration to build a national refinery as mentioned above.

Refining at Curacao

The refining of petroleum has become the dominant industry of the colony of Curacao. The refinery of the Curacaosche Petroleum Industrie Maatschappij was considerably enlarged during 1928 so that at the end of the year capacity was about 147,000 bbls. a day. During the year, 68,387,508 bbls. of crude were refined. The fleet engaged in transporting crude from Venezuela was increased by four new tankers and at the end of 1928 consisted of 30 tankers and a towed lighter with a total capacity of 509,600 bbls., compared with 402,500 bbls. at the end of 1927. There was a marked increase during the year in the number of salaried employes and laborers.

Three loading piers were completed in Caracas Bay for shipping fuel oil or for bunkering vessels. The construction of a new plant for storing, mixing and shipping of gasoline was started at Bullen Bay, west of Willemstad. The operation of this additional facility will remove part of the hazard from the refinery at Curacao and relieve the Caracao harbor from the movement of vessels transporting gasoline.

Near Orangestad, Aruba, the refinery of the Arend Petroleum Maatschappij was completed during 1928 and placed in operation with a nominal capacity of 15,000 bbls. of crude daily. Refining operations are not so diversified as at Curacao. Operation was begun at San Nicholas Bay of a large refinery for the Pan American Corp., which is expected to reach full capacity late in 1929.

In Czechoslovakia

The subsidiary of the Vacuum Oil Co. in Czechoslovakia has operated, for several years past, the oil refinery at Kolin owned by the Kolin Petroleum Co., and has held an option to purchase it before August 1, 1931, for $500,000. An offer of $400,000 has recently been accepted, however, and the plan of erecting a cracking plant at Prerov, Moravia, has

(Continued on Page 248)

Consumption in Argentine Grows

Large Increase in Gasoline Shipments From United States While Imports of Crude Oil Are Much Greater

By Special Correspondent

Shipments of gasoline from the United States to the Argentine Republic during the first nine months of this year reached a total of 1,863,148 bbls., as compared with 1,280,564 bbls. during the similar period in 1928, an increase of 582,584 bbls., or 45.5 per cent. While this might be taken to indicate a phenomenal increase in gasoline demand in Argentina, preliminary figures covering the first six months of 1929, as published in the Argentine petroleum information bulletin, show that there has been but a slight increase in gasoline receipts at Argentine ports and that the increased shipments from the United States have been offset by smaller shipments from Mexico and Peru.

Gasoline receipts at Argentine ports during the first six months of 1929 totaled 1,096,267 bbls., as compared with 1,063,764 bbls. during the same period in 1928. Receipts from the United States increased by 218,673 bbls., amounting to 846,825 bbls., or 77 per cent of the total receipts. This proportion compares with 59 per cent over the same period in 1928. Gasoline receipts from Peru dropped from 343,435 bbls. to 179,170, a decrease of 48 per cent and a drop of the same proportion was registered when receipts from Mexico decreased from 92,177 bbls. in 1928 to 47,772 bbls. during the first six months of 1929. Russian gasoline began to be imported into the Argentine in November, 1928, and the receipts have continued since then at the rate of about 1,000 bbls. a month, the total for the first six months of 1929 being 6,095 bbls. Among the miscellaneous gasoline receipts reported were 13,948 bbls. from Venezuela and 2,457 bbls. from Germany.

Crude Imports Increase

Although there was only an increase of 3 per cent in gasoline receipts during the first six months of 1929, as compared with 1928, the Argentine imports of refinable crude oil increased from 975,273 bbls. during the first half of 1928 to 1,713,868 bbls. during the same period of 1929. This is an increase of 738,595 bbls. or 76 per cent, which indicates that the demand for petroleum products in the Argentine is showing a substantial increase which is being met through increased refining activity. Nearly all of the crude imported into the Argentine is destined for the port of Campana, a relatively short distance from Buenos Aires, where the refinery affiliated with the West India Oil Co. is located. These increased crude receipts at Campana reflect the current situation: local crude oil production is not increasing at a rate sufficient to care for the increased demands and the government refinery at La Plata, which operates on local crudes, is not in a position to supply the increasing demand for refined products. Crude oil from other countries is being imported in constantly increasing amounts to supply the privately owned refineries and it is this foreign crude, privately refined, which is meeting the increased requirements of the Republic.

The crude oil imported into Argentina is mainly of Peruvian origin, with increasing quantities arriving from Colombia. During the first six months of 1929, a total of 1,491,631 bbls. of Peruvian crude were received, as compared with 911,081 bbls. during the same period of 1928. One shipment of 49,192 bbls of Colombian crude was received during the first half of 1928, as compared with three tankers, carrying 155,737 bbls., during the first six months of 1929. About 15,000 bbls. of crude from the United States was received in 1928 and about 66,500 bbls from Mexico during the first half of 1929.

Refined Products

Kerosene receipts during the first half of 1929 amounted to 188,505 bbls., as compared with 146,923 bbls. during the first half of 1928. Of the 1928 receipts, 79,925 bbls. came from the United States and 66,998 bbls. from Mexico. Receipts from Mexico increased during the first half of 1929, reaching a total of 96,819 bbls., while receipts from the United States increased to 87,722 bbls. Russian kerosene was introduced into the Argentine simultaneously with the Russian gasoline and 3,964 bbls. were received during the first half of 1929.

Gas oil and fuel oil shipments from the United States to the Argentine have dropped from 1,804,632 bbls. during the first nine months of 1928 to 419,325 bbls. during the same period of 1929, a decrease of 1,385,307 bbls. Fuel oil imports into the Argentine were approximately 15 per cent less in the first six months of 1929, as compared with 1928, but the major reason for the decline in receipts from the United States is the substitution of fuel oil from Venezuela and the Dutch West Indies for that previously imported from the United States. During the first six months of 1928, fuel oil imports from the United States amounted to two-thirds of the total receipts; during the first six months of 1929, receipts from the United States amounted to only 15 per cent of the total shipments from Venezuela and the Dutch West Indies supplied 81 per cent, as compared with the one-third proportion during the same period of 1928.

Receipts of lubricating oils increased 14 per cent during the corresponding periods of 1928 and 1929, but receipts from the United States were only slightly larger than in 1928. The principal increase was in Russian oils, imports of Russian lubricants increasing from 208 metric tons in the first six months of 1928 to 2,778 metric tons during the corresponding period of 1929. Grease receipts increased by 9 per cent, but receipts from the United States increased by 20 per cent, these receipts being increased in compensation for the drop in grease receipts from Mexico.

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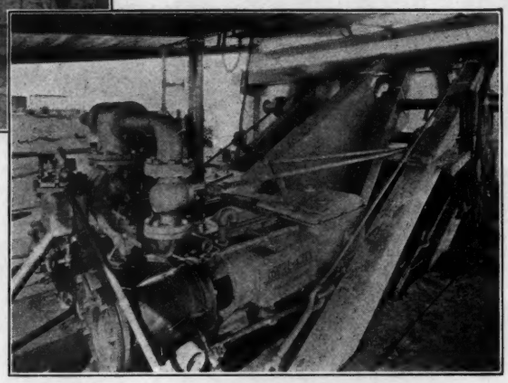

WIDE-AWAKE drillers appreciate the new features of the Ideal-AJAX 12x12 Twin Roller Bearing Engine. Installations pictured above show comparatively recent equipment in the Oklahoma field. On the opposite page is an illustration of a still later Ideal-AJAX outfit showing even later developments.

Many Ideal-AJAX users are hooking up the new large-capacity steam separator and trap with old equipment to secure new speed and economy.

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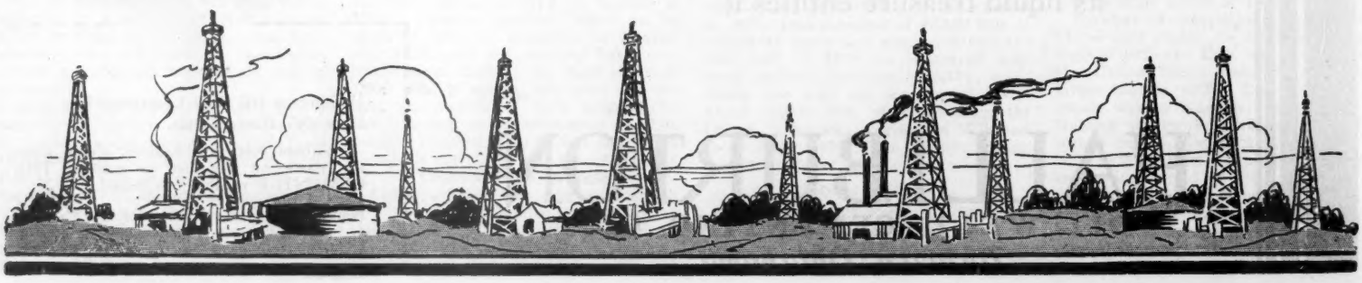

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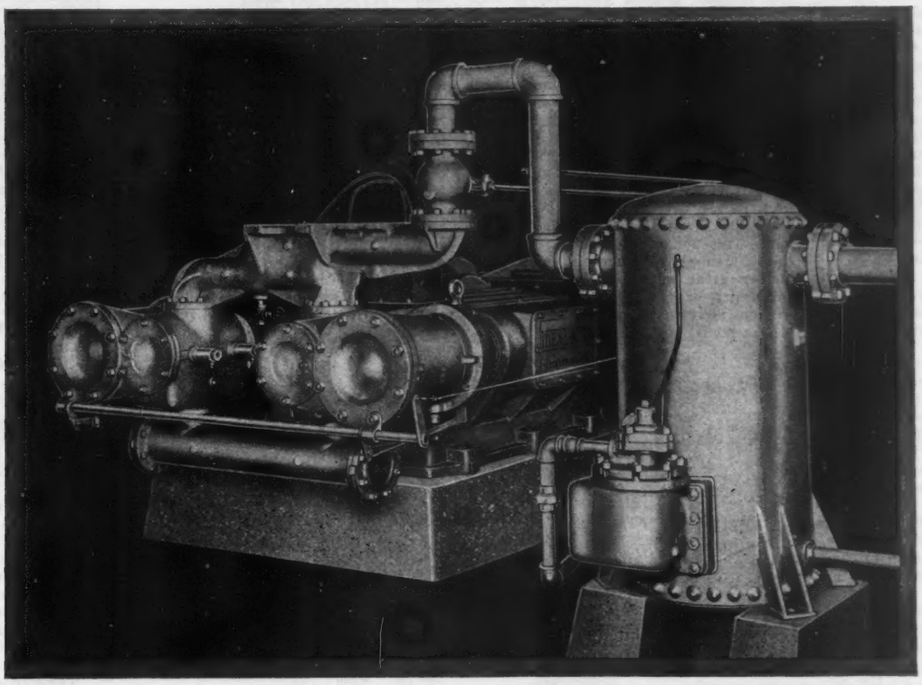

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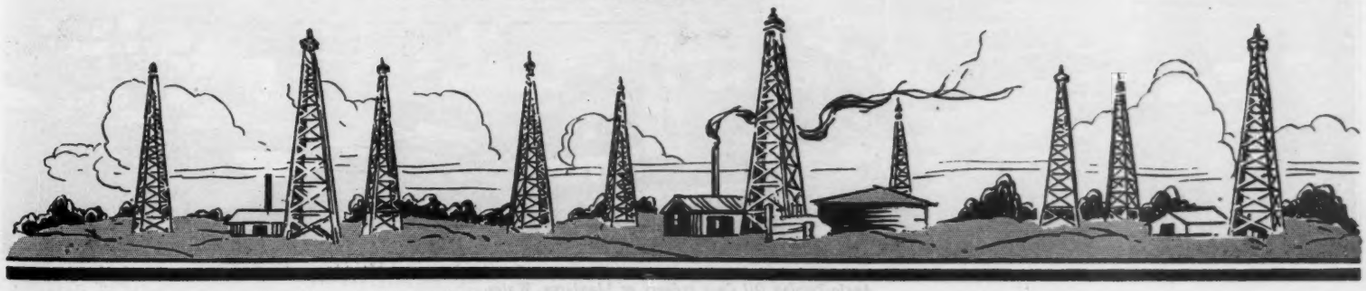


Llandarcy Plant Constantly Improved

Anglo-Persian Oil Co. Great Plant Keeps Pace With Latest Developments in Refinery Practice

The Llandarcy refinery of the Anglo-Persian Oil Co., a large plant established in South Wales in 1922, was hailed at the time as a notable landmark in the British oil industry. The building of the Llandarcy refinery marked the first important step that had been taken to establish the complete refining of petroleum as a home industry in Great Britain, and it has since been operated with the greatest of success, being constantly in line with new developments in refinery practices. Its success, according to a statement by the company, has justified the hopes of its founders and made it a fitting memorial to the English oil pioneer whose name it bears, William Knox D'Arcy, the original concessionaire of the Anglo-Persian oil fields.

The decision to build a refinery in Great Britain was made by the Anglo-Persian Oil Co. as early as 1914, and although the World War delayed construction, the present site was finally chosen in 1917 near Skewen, South Wales. Although construction was started almost immediately, it had to be stopped shortly afterwards owing to the wartime shortage of men and material. Work was resumed again, however, in February, 1919, when a spur line was built from the Great Western Railway main line near Skewen to the refinery site, which comprises some 650 acres of land. The refinery gradually took shape, while all haste was made to rush to completion the construction of jetties for oil tankers in Swansea Harbor, the erection of the large tank farm for the storage of crude oil and its products, and the laying of the many miles of pipe line required to link up all parts of the enterprise. Work was also begun on the picturesque village of Llandarcy, where many of the process and other workers are housed.

By 1921 the construction of the refinery and of the subsidiary works at the Queen's Dock (including three jetties with pipe line connections) was sufficiently far advanced to permit of the start of refining operations. The first tanker docked in April, 1921, and refining actually started in July of that year.

Quickly Enlarged

In June, 1922, the refinery was formally opened by Stanley Baldwin, then president of the Board of Trade. The establishment of this, the first large scale refinery for the treatment of imported crude oil erected within the British Isles, was so successful that almost at once it was decided to enlarge the plant. The construction of a new section was accordingly started on an area lying to the north of the Great Western Railway line, this section being planned colely for the treatment of distillate and its refining into petrol and kerosene. Since that time, new plants has been added from time to time, keeping pace with the latest developments in refinery practice. Today, the company declares, Llandarcy stands among the most up-to-date enterprises of its kind in the world, and nowhere will be found a more modern refinery nor one which embodies more fully the proved results of careful refinery practice.

Crude oil used as raw material by the Llandarcy refinery is secured almost entirely from the prolific oil fields of southwest Persia over which the Anglo-Persian Oil Co. holds an exclusive concession. This not only insures an adequate and safe supply of crude oil, but has the further great advantage of securing a uniformity of product not obtainable from a mixture of crudes drawn from several different fields. Persian crude oil is of an exceptionally high quality, having a specific gravity of .836 (37.8 A.P.I.) and containing a large percentage of the more volatile hydrocarbons from which the highest grade gasoline and other white oils are derived, the crude oil yielding in addition gas oil, fuel oil, and lubricating oils.

The Llandarcy refinery, which now occupies altogether about 650 acres of land, is in three main sections; an area adjoining the Queen's Dock with piers, pipe lines and storage tanks; the refinery proper about 4 miles distant; and the main tank farm adjoining the refinery.

Crude From Persia

Crude oil is transported direct from Persia in tankers owned by the Anglo-Persian Oil Co., the fleet of over 80 vessels with a total deadweight capacity in excess of 700,000 tons being operated by a subsidiary shipping enterprise, the British Tanker Co., Ltd.

Upon arrival at Swansea, the tankers enter the Queen's Dock, where the berths built by the Anglo-Persian company provide facilities for loading or discharging cargoes of five vessels simultaneously. Each jetty is also provided with an 8-inch pipe line to an oil and water separator for the receipt of oily ballast from ship's tanks or bilges, the water from the separator thus being entirely freed from any traces of oil.

In planning the great docks area, known as the "transit site," the company's chief concern was the "quick round" of the 10,000-ton tankers. The success of this is assured by a tank storage capacity at this installation of close to 100,000 tons, a series of 14 pipe lines ranging from 4 to 12 inches in diameter, and a powerful pumping station. With the efficient arrangements here a cargo can be pumped ashore, or a full cargo of refined products can be loaded in less than 24 hours. Incidentally, a valuable addition to Swansea's facilities as a port, giving it an advantage not possessed by any other port in Great Britain, has been provided by the erection beside the harbor approach jetty of two service tanks for fuel oil, allowing passing ships to bunker here without having to enter the docks.

From the tanks at the transit site the crude oil is forced by the powerful electrically driven pumps of the pumping station through large-diameter pipe lines to the main tank farm, other pipe lines returning the refined products to the tanks of the transit site for shipment.

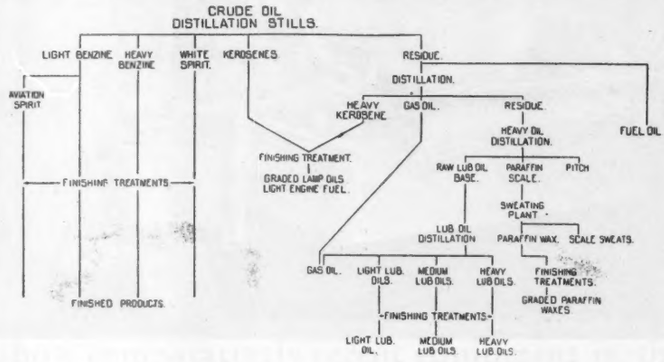


Diagram of refining process at Llandarcy.

Within the tank farm area are 60 tanks, the majority of which can each store the full cargo of a 10,000-ton tanker. An idea of the immense quantity of crude oil or refined products for which there is storage at that point may be gained from the statement that the combined capacity of the tanks is nearly 160,000,000 imperial gallons.

The tank farm occupies a large area adjoining the refinery proper and something in the neighborhood of 70 miles of various sized pipe lines are in daily use linking up the three installations.

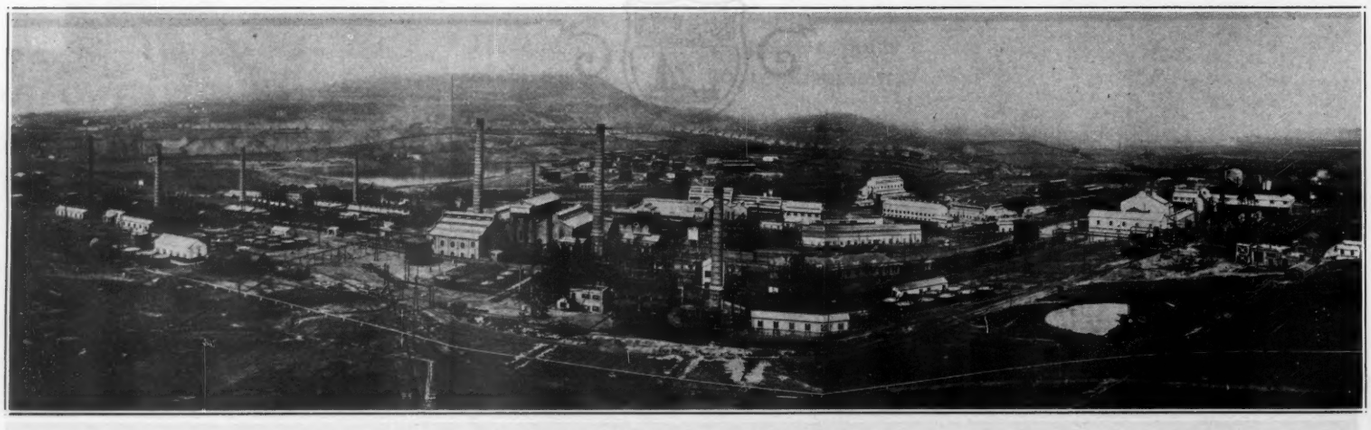
The refinery area and tank farm is enclosed and kept under close surveillance. Dominating the enclosed area is a large water tower with capacity for 250,000 gallons, situated at the highest point of the property. Surmounting this is a lookout from which every part of the refinery and tank farm can be seen, a searchlight enabling observations to be made at night.

Constant Research

In the refinery process every advantage has been taken at Llandarcy of the knowledge gained by practical experience in other refineries throughout the world, as well as from the research work conducted by the Anglo-Persian company itself, which for years has been studying the special characteristics of Persian oil, and has introduced many important improvements in refinery practice throughout the world, as well as from the research work conducted by the Anglo-Persian company itself, which for years has been studying the special characteristics of Persian oil, and has introduced many important improvements in refinery practice.

Throughout the entire refining operation at Llandarcy great attention is given to the utilization of waste products and to the economy of fuel by efficient heat exchanging. A very considerable saving of fuel is secured by means of heat exchangers—an arrangement of pipes that permits the hot oil leaving the stills to give up its heat to the incoming crude. The continuous distillation system is employed at the refinery, the crude oil pumped from the tank farm passing through a series of stills in a steady flow. Uncondensable oil-gas is utilized to heat these stills.

The vapors from the heated oil pass through fractionating columns, where they are split up into different products such as aviation gasoline, motor spirit, white spirit and kerosene, and these products, when condensed, are ready for the particular refining treatments. The residual oil from the stills is partly disposed of as fuel oil, the balance going to another section of the refinery where



Anglo-Persian Oil Co.'s refinery at Llandarcy, Wales.

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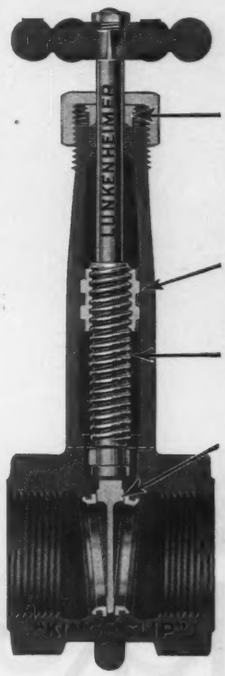
Flange End Valves—face to face dimensions conform to standard trade practice.

All patterns of Lunkenheimer "King-clip" Gate Valves are illustrated and described in Booklet No. 504. A copy will be sent upon request. Lunkenheimer Distributors are prepared to furnish "King-clip" Gate Valves.



Gland in stuffing box sizes 1 inch and larger

Iron bonnet with bronze threaded bushing providing non-corrosive contact with stem.

Bronze stem. Rugged wear-resisting threads. Full contact with bronze bushing in bonnet with valve open or closed. Repacking shoulder—valve may be repacked under pressure when wide open.

Bronze double-faced disc, sharply tapered, will handle heavily impregnated fluids. Horseshoe band strengthens connection with stem.

Iron Body with bronze seat rings rigidly secured. Extra long pipe threads accommodate both American (Brigg's) Standard and A. P. I. line pipe.

Fig. 1640
Iron Body Bronze Mounted

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
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LUNKENHEIMER VALVES

5-53-91

WIDESPREAD
DOMINION OF CANADA
MONTANA
TEXAS
MEXICO
FRANCE
KIRK-MORROW
THE KIRK MORROW IRON WORKS IOLA KANS.

Sand Reels, Sampson Posts, Jack Posts, Tanks, Crown Blocks, Walking Beams, Derricks, Steel Pitmans, Sand Wheels, Calf Wheels, Bull Wheels, Rig Irons.

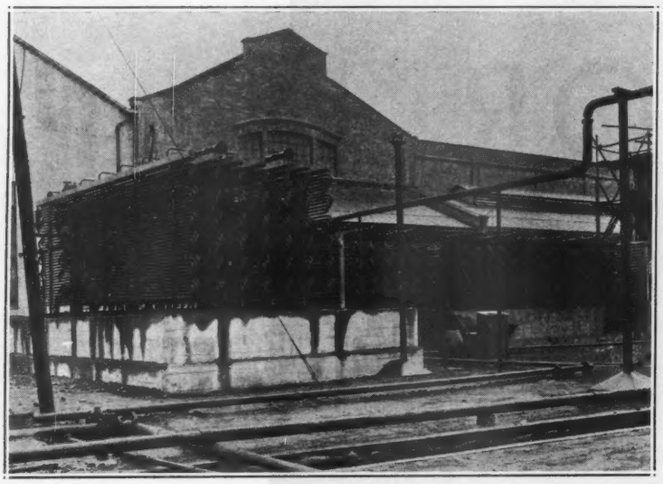
THE KIRK-MORROW IRON WORKS COMPANY

Sales Offices: Hunt Bldg., Tulsa, Oklahoma; Magnolia Bldg., Dallas, Texas; Central Bldg., Wichita, Kansas.

it is turned into gas oil, intermediate oil, heavy oil and residue.

The distillates from the crude oil stills are piped to the refining area, where they are washed by a counter-current washing process. In the case of motor spirit this treatment is carried out first by washing with a solution of caustic soda, followed by treatment with calcium hypochlorite, and finishing with a final soda wash. The distillate is then ready to be pumped away to the storage area.

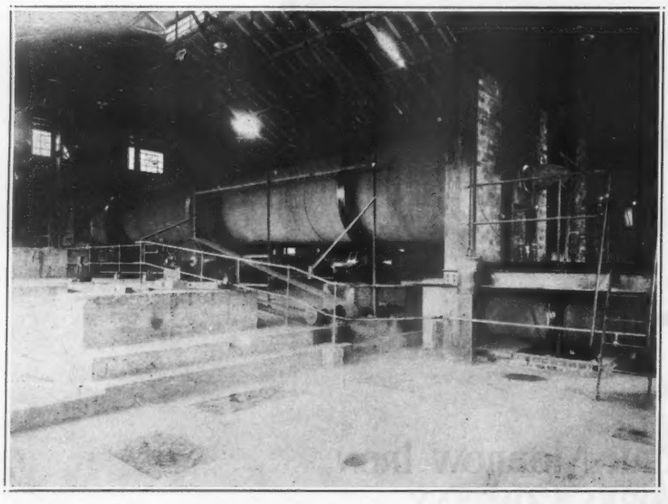
The special hypochlorite treatment referred to originated with the Anglo-Persian Oil Co., which claims that its great advantage is that it does not destroy—as happens in many refineries where a different treatment is used—those highly valuable constituents which give great efficiency to the finished petrol. The company stresses this in marketing its "BP" motor spirit.



Condenser coils for compressors at paraffin sheds and Sharples dewaxing plant, Llandarcy refinery.

Special Process

Kerosene is subjected to a washing process with other chemicals, and afterwards undergoes a special process of filtration through granular bauxite, during which it is deodorized and decolorized, besides being freed from a large percentage of its sulphur compounds.



Rotary furnace at Bauxite plant.

In consequence of the rapidly increasing demand for motor gasoline in Great Britain, and in accordance with up-to-date refinery practice, two large cracking plants have been installed at Llandarcy, where residue and distillate oils can be converted in a single process into motor spirit. "This process," says the company, "was originally discovered by Dr. James Young of Glasgow, who was the real pioneer of the mineral oil industry. It is interesting to note that the shale mines exploited by Doctor Young and his Scottish associates, and the refineries they erected, are still in operation today as part of the organization of the Anglo-Persian group of oil companies."

A portion of the residue obtained from the primary distillation referred to is redistilled, yielding heavy kerosene, gas oil and wax distillates with pitch as a residue. The wax distillates are transferred to the dewaxing plants where they undergo refrigeration, the crude wax being removed by means of filter presses and centrifuging, leaving a dewaxed oil which forms the base for the manufacture of lubricating oil.

The crude wax is subjected to a sweating process for the production of various grades of white wax suitable for market requirements.

The dewaxed oil is redistilled to produce light, medium and heavy lubricating oils, these receiving a finishing treatment with acid and clay.

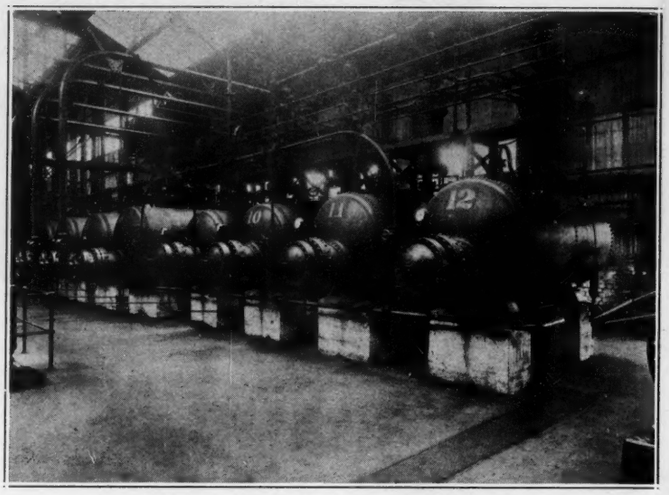
Equipment and Storage

An extensive storage area for finished lubricating oils, comprising 20 tanks for different types of oils, has recently been constructed at the Llandarcy refinery and an adjoining section of the plant contains all the most modern appliances for preparing and cleaning barrels and drums and for filling them with lubricating oils.

The boiler house in the Llandarcy power house is equipped with the water-tube type of boilers, and is capable of generating 270,000 pounds of steam per hour. There are large turbogenerators which provide power to operate the numerous oil and water pumps and which supply also the electricity required to light the entire refinery and the staff houses at Cefn Park nearby. The turbines are operated by high-pressure steam and an important saving is effected through an arrangement by which the waste steam, at low pressure, is passed out automatically from the turbines to provide the whole of the steam requirements for distillation and other purposes throughout the refinery.

Two reservoirs of a total capacity of 80,000,000 gallons, supply the necessary water for the various processes, as well as for the boilers and other purposes.

The chemical laboratory at Llandarcy is an important detail of the refinery. More than 1,000 routine tests of oil covering every stage of its progress through the refinery are made each day in order to insure uniformity of product. The laboratory also contains an experimental engine in which the motor spirit is subjected to an engine test to maintain the company's standard for its "BP" petrol.



Extract evaporators at S O refinery, Llandarcy.

Fire risk is reduced to a minimum at Llandarcy by elaborate precautions, embodying the most modern fire fighting installations, including foam and chemical engines manned by a special staff. The use of fireless or "thermos" locomotives is a further precaution against fire. These operate on the steam accumulator principle, and are charged from the main steam battery at a pressure of 160 pounds, sufficient to run the locomotives on general shunting work around the refinery for approximately four hours.

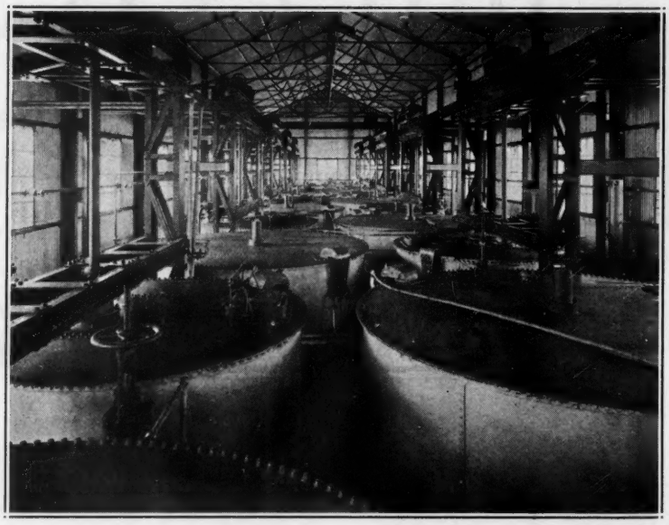
Another noteworthy feature of the refinery is the well-equipped first aid station. In this the company has made elaborate provision to insure proper attention for accident cases, the first aid station being the headquarters of an organization which has trained men on duty at all working sections both day and night.

The same regard for detail which has made such a success of the refinery has been given to the construction of the company's model village at Llandarcy. Named, like the refinery, itself, to commemorate the late Mr. D'Arcy, the village has the characteristics of a pleasant garden suburb. It is picturesquely placed on rising ground, and the hundred or more well-designed houses, built of stone or brick and stucco border the winding roads with ample garden grounds surrounding them. Workers engaged on the more vital details of the refinery processes are housed here. For the senior staff another residential, known as Cefn Park, has been laid out. Here the company has erected some 20 commodious and comfortable houses.

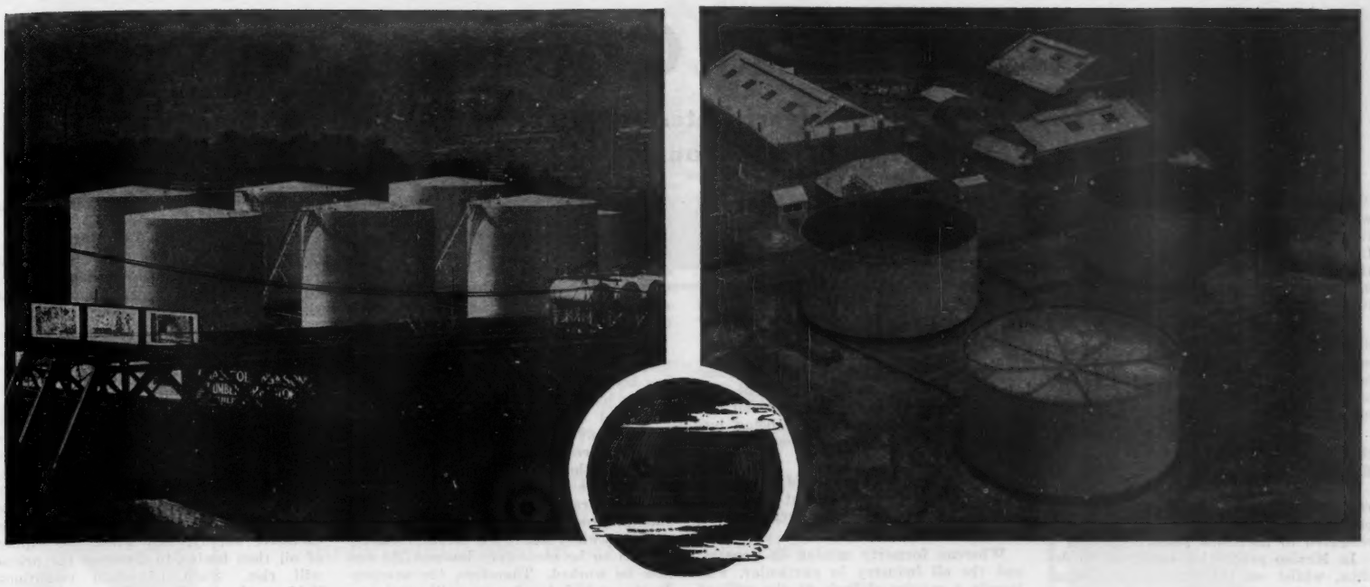
Distribution Methods

The products of the Llandarcy refinery are despatched mainly by tankers, although a small proportion leave the refinery in rail tank cars. Distribution by tanker is effected to the chain of main storage installations erected by the company at the principal ports of England, Wales and Ireland, while Scotland is supplied by another of the company's refineries located at Grangemouth. Throughout England, Wales and northern Ireland, the company's products are

(Continued on Page 254)



Continuous washers, Llandarcy refinery.



Worldwide tank and roof service

Wiggins Breather Roofs

Evaporation of oil in standing storage is practically eliminated by the use of Wiggins Breather Roofs, which flex up and down with change in vapor volume. When tanks are full this takes care of all expansion without allowing any vapor to escape through the vents. On a 55,000 bbl. tank storing motor fuel gasoline, for example, the Breather Roof saves 800 to 925 bbls. of gasoline a year—which is more than enough to pay the additional cost of this roof. In addition, the gravity of all the oil in the tank is maintained.

Wiggins Floating Roofs

Evaporation losses both in volume and reduction of gravity are cut in working tanks by Wiggins Floating Roofs. Riding on the surface of the liquid at all levels, they keep air out of contact with the oil. A working tank handling 10,000 bbls. of crude daily loses 3,000 to 4,500 bbls. a year if equipped with an ordinary gas-tight roof, and not more than 150 bbls. with the Floating Roof, thus paying for the added cost of the roof in a few months. Fire hazard is also eliminated and sour oil corrosion greatly retarded.

Horton Tanks

Storage tanks for all oil products and elevated tanks for water are built for erection at any location. Field erected storage tanks range from 25,000 gallons and up. Standard sizes for elevated tanks are from 5,000 to 2,000,000 gallons. Hortonspheres (spherical pressure tanks) for storing high volatiles are built in 5,000 and 10,000 bbl. sizes; also steel plate work of all kinds for refinery service. Address our nearest office for printed information on any of these products or quotations on sizes you contemplate installing.

BREATHER ROOFS

ELEVATED TANKS

STORAGE TANKS

HORTONSPHERES

REFINERY WORK

FLOATING ROOFS

CHICAGO BRIDGE & IRON WORKS

Dallas..... 3341 Magnolia Bldg.	Chicago..... 2128 Old Colony Bldg.	San Francisco.....1054 Rialto Bldg.
New York.....3147 Hudson Terminal Bldg.	Detroit..... 1514 Lafayette Bldg.	Boston..... 1517 Consolidated Gas Bldg.
Cleveland..... 2204 Union Trust Bldg.	Philadelphia..... 1615 Jefferson Bldg.	Havana, Cuba..... Apartado 2507

WIGGINS ROOFS and HORTON TANKS

Rationalization Is Outstanding Need

Declaration of Sir Henri Deterding in Reporting on Situation to Royal Dutch Shell Group. Must End Overproduction

Rationalization of the oil industry on a world-wide scale, notably in the correction of excessive production in principal fields, is seen as the outstanding need of the oil industry by Sir Henri Deterding, managing director of the Royal Dutch-Shell interests.

Russia, while at present a potential disturber of world oil markets, will ultimately require all of her production for home requirements, and in addition will become a large importer of refined products, Sir Henri believes.

In reporting on the world activities of the Royal Dutch-Shell group for 1928, Sir Henri said in part:

As was to be expected, Venezuela now ranks second on the list of petroleum-producing countries, Russia having been relegated to the third place.

In Mexico production continues to decline, whilst on the other hand Colombia records an appreciable increase.

Increasing Production

The Dutch East Indies are showing steady progress; Persia and Rumania, too, have increased their productions. Likewise the figures of Trinidad and Egypt show a considerable advance upon last year.

In Mesopotamia there is much exploration activity; of a regular production there can be no question until the pipe line to the seaboard is ready.

Whilst it is seen from the foregoing that the total crude oil production in 1928, compared with that of 1927, again shows an increase of 5.41 per cent, the figures for the first quarter of 1929 give cause for serious thought, the average daily production in the United States, which in 1928 was 2,460,000 bbls., having increased during the first three months of 1929 to 2,655,000 bbls. Now such figures need not at once give cause for serious uneasiness, for, though there may be overproduction, it is not so great as pessimists would have one believe. Moreover there is more than one reason to expect a continual and appreciable increase also in consumption. For instance, at present Russia, it is true, belongs to the oil-exporting countries, but this is an artificial export. Whilst the Naphtha Syndicate (the government oil concern which controls all Russian production) is making scarcely any profit, in Russia itself there is such a shortage of petroleum that hundreds of farmers who have tractors run on petroleum are unable to use these in the cultivation of their land, in consequence of which the whole sowing campaign threatens to become a failure. Under such conditions it can hardly be wondered at that the Soviet government, in the middle of last March, should have had to publish the fact of their being unable to feed the whole population until the next harvest, due to a shortage of a million tons of wheat.

Russia Pushing Exports

When one reads the statement recently made to a reporter by a member of the British Industrial Delegation on his return from Russia, then it is clear that the policy of the present Soviet government to push the exports in spite of the population itself being in dire need of goods exported—e.g., butter, fruit, etc. —is not confined to petroleum only.

This justifies the conclusion that when normal conditions ultimately return in Russia not only will the present export of petroleum and fuel oil (together no less than 1,548,713 metric tons) disappear altogether, but even considerable quantities of these products will have to be imported into that country, and this is to be taken into due account when talking at present of overproduction.

All this, however, does not alter the fact that the problem of overproduction has become a matter of great importance for our industry.

Must End Overproduction

In our previous report attention was already drawn to the initiative taken by some producers in the United States in introducing a policy of conservation or rationalization on a moderate scale. Now that overproduction is assuming such grave proportions, however, it has become clear to the oil industry in general that in the future the waste of crude oil due to the rate of production not being justified by the demand will have to be put an end to.

The increase of the world's production is not the result of chance, but the logical consequence of a number of factors which will now be briefly referred to.

Whereas formerly mining in general, and the oil industry in particular, was largely a matter of luck, at the present day science is so far advanced that now much less is left to chance. The old methods of geological exploration have been supplemented by modern geophysical and other methods which have made it possible to collect far more geological data concerning the subsurface, in consequence of which oil has been found to exist in territories formerly considered to offer little hope, so that the total oil reserves of the world have been proved to be much larger than expected.

But it is particularly in drilling technics that such a considerable advance has been made; whereas a well of 1,000 meters used to take a year or more to drill and constituted a great technical problem, at the present time a well of 2,500 meters can be drilled in three months, although the consequence of this speed is, as a rule, less perfect drilling. As a natural result this saving in time enables production to be obtained much sooner, whilst, moreover, strata formerly deemed to be absolutely inaccessible can now be worked. Therefore, the overproduction, which has become still more pronounced in the early part of the present year, is not to be ascribed in the first place to the discovery of new oil fields, but rather to the accelerated and more intensive working of the existing oil fields.

To Nobody's Advantage

This overproduction would become of relatively long duration if no steps were to be taken for a proper organization of the oil industry as a whole.

It is to nobody's advantage if the industry is conducted in such a manner as to produce alternating periods of overproduction and underproduction. The one is the inevitable consequence of the other, for with overproduction, thus with low prices, producers who are less financially strong and work uneconomically must at a certain moment give up the struggle, and new enterprises are discouraged. Just by the time that that moment arrives the demand will have adjusted itself to the excessive supply, and when the supply of oil then begins to decrease the prices will rise. Such uncertain conditions liable to heavy fluctuations are just as detrimental to the producer as to the consumer.

During the period of overproduction

(Continued on Page 132)

Lobitos Reports Peru Operations

Adversely Affected by World Conditions in Industry. Expenditures Limited During Depression in Markets

Lobitos Oilfields, Ltd., holding company for the Cia. Petrolera Lobitos, a Peruvian company, reports satisfactory progress in its development operations in Peru, but has been adversely affected by the unfavorable conditions which have prevailed in the petroleum markets, according to the Rt. Hon. Lord Forbes, P. C., president of the company.

Developments in Peru during the closing half of the year, the company states, have been unimportant. The report covering 1928 and the first half of the current year says, in part:

"The year has been one of great difficulty. Expenditures on new drilling is being limited by the Peruvian company during the period of low prices and was restricted to replacing the usual falling off in production of older wells. In this policy the directors concur, for the two-fold reason that it is undesirable to deplete the resources of the company, in the shape of oil in the ground, without profit, and that, should prices improve even moderately, the present production would yield a fair return. This policy enables the Peruvian company to dispense with the services of about 1,000 men. It also means less work in the engineering shops, less transport, less provision for fresh water, reduction of supplies and stores, and some reduction of the higher personnel; all of which in the aggregate comes to a good deal of money and saves our financial resources.

"At the same time, the organization is maintained as a going concern in good shape. Just so many new wells are being drilled as we believe will take care of the natural diminution in supply of the older wells, thus following the policy of restriction which market conditions make desirable, while maintaining our property and ability to develop when prices improve. Some 121,068 feet were drilled during the ten months ended October 31, 1928, against 177,776 feet during the 12 months of 1927.

"The result of the operation of our steamers reflects the depressed condition of the freight market during 1928. An improvement has recently taken place, and as the boats we charter to others were chartered for short periods only, there is ground to expect that they will show a better profit for 1929.

Results of Drilling

"The results of the drilling on the field for the year have been satisfactory, although test wells drilled on exploration areas in other districts have not given good results. It is interesting to note that in one well a depth of 6,332 feet was reached, which is a record for the field. This well passed through several oil sands on its way down. Production for the whole year 1928 was 314,281 tons, compared with 296,248 tons for the preceding year, and is since being maintained at about 26,000 tons per month.

"The casinghead gasoline plant referred to last year came into partial operation about the end of 1927. It worked satisfactorily during 1928. The daily production has been increased and is still increasing. The total gasoline produced during a 10-months period was, in round figures, 1,690,000 gallons, which, although the price obtainable for the gasoline is not high, brings in a new and welcome addition to the company's income, especially when the price of oil itself is so low.

"With regard to market conditions, the price obtained for oil in 1927 showed a reduction of £1 2s. 11d. per ton compared with the 1926 average. So bad was the market during 1928 that the average price obtained was 8s. 7d. per ton less than in 1927. We reached a price which was below cost of production, taking into account necessary depreciation. Of late the world has become thoroughly well aware of the condition which has been reached on the productive side of the industry, and a concerted movement for restriction of output has taken place—I regret to say, so far without satisfactory result. Production in the United States still remains at an excessive figure. The difficulties of organized restriction are no doubt very great, and it becomes a question whether effective organized restriction will take place or whether, by a painful process, supply and demand eventually approximate. There is no doubt that growing consumption will eventually overtake present production.

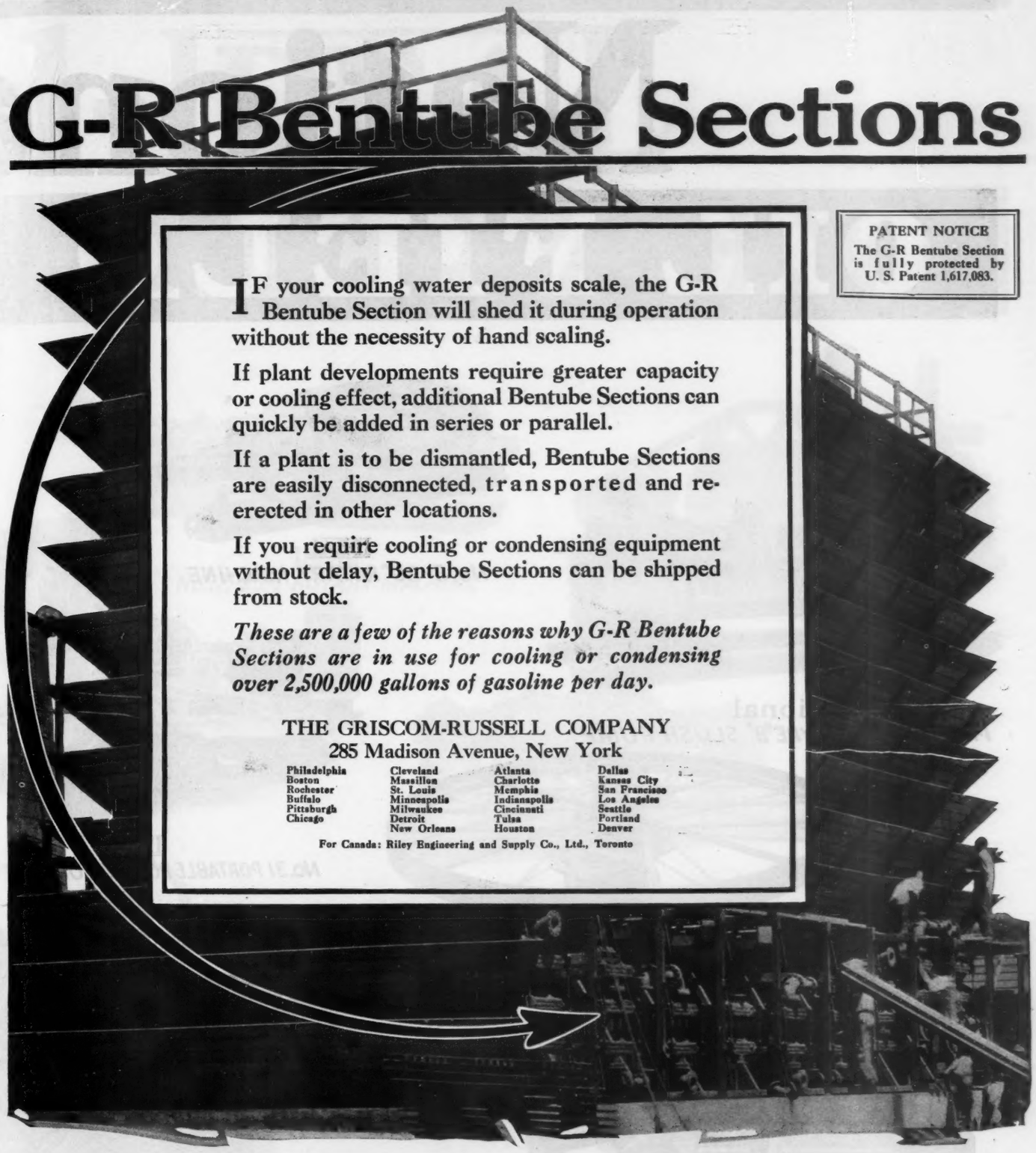
Other Companies

"Information we have as to development of other companies in which we are interested, namely: the International Petroleum Co. and Anglo-Ecuadorian Oilfields, is satisfactory. Since the accounts for 1928 were closed I am glad to say some improvement has taken place in the basis price of oil of the quality we sell, and for 1929 we shall obtain a slightly higher premium for that quality as compared with 1928. We therefore feel justified in recommending the payment of a dividend of 10 per cent, although it was not fully earned during the year. Fortunately, following a conservative policy, we had carried forward a considerable sum of profits undivided.

"It may be interesting to note that this is the twenty-first general meeting of the company. For the first few years the company had not reached a dividend-paying stage, but since 1912 shareholders have received 435 per cent upon the respective capitals at the time being paid up, plus a free distribution of shares in Anglo-Ecuadorian Oilfields equal to 40 per cent and the opportunity of participating in various issues on bonus terms. It is true that through the unprecedentedly bad condition of the market our dividend is reduced to 10 per cent, but it is upon a capital of 1,000,000, as compared with the former capital of £400,000. We stand today with a proved and well-equipped field; with a trained and experienced personnel; with a larger and more varied market; with financial resources carefully built up, strong enough to withstand any probable strain, and ready to reap advantage of that improvement in the condition of the industry which must sooner or later occur.

"In conclusion, while conditions of the oil market are still far from satisfactory, the indications at present are that the current year will show some improvement."

G-R Bentube Sections



IF your cooling water deposits scale, the G-R Bentube Section will shed it during operation without the necessity of hand scaling.

If plant developments require greater capacity or cooling effect, additional Bentube Sections can quickly be added in series or parallel.

If a plant is to be dismantled, Bentube Sections are easily disconnected, transported and re-erected in other locations.

If you require cooling or condensing equipment without delay, Bentube Sections can be shipped from stock.

These are a few of the reasons why G-R Bentube Sections are in use for cooling or condensing over 2,500,000 gallons of gasoline per day.

PATENT NOTICE
The G-R Bentube Section is fully protected by U. S. Patent 1,617,083.

THE GRISCOM-RUSSELL COMPANY
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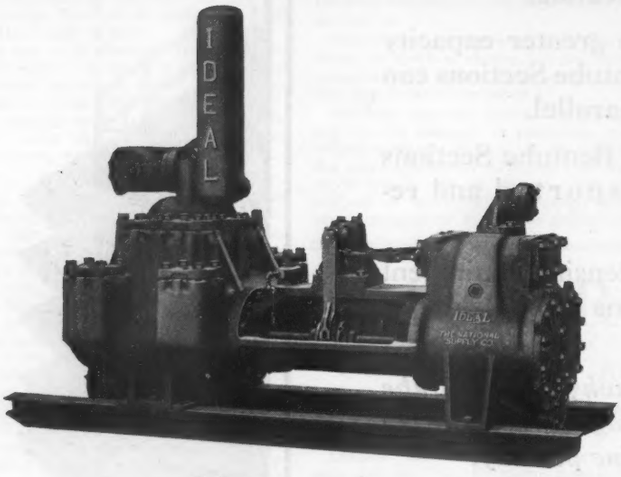
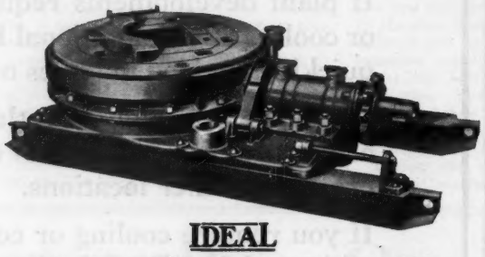
Heat Transfer Apparatus

Nationa

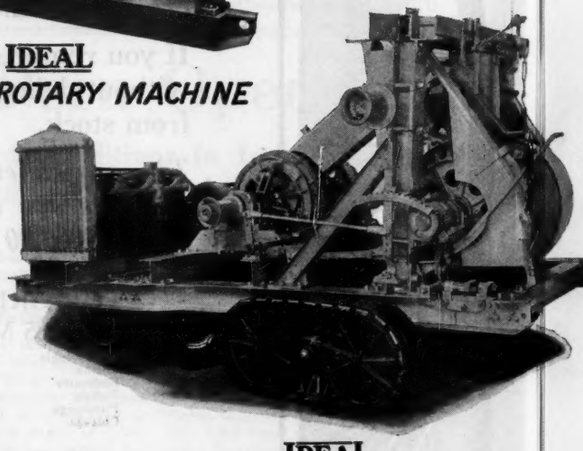
OIL FIELD E



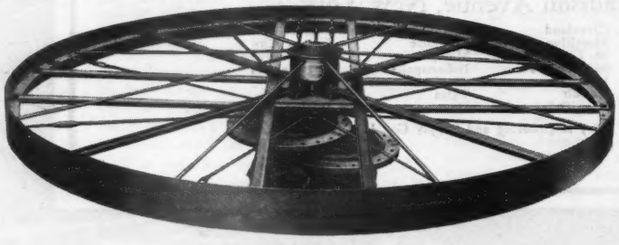
National
14 X 7¼ X 14" TYPE "B" SLUSH PUMP



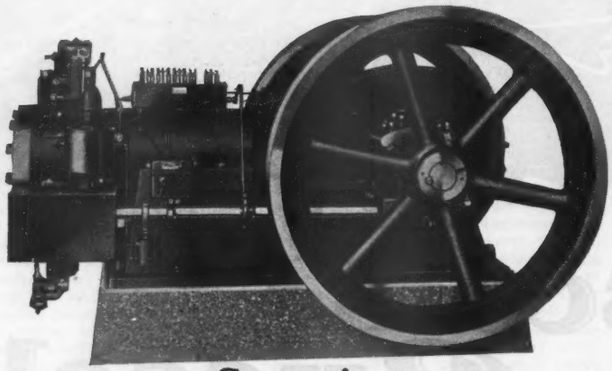
IDEAL
No. 8-20" ROTARY MACHINE



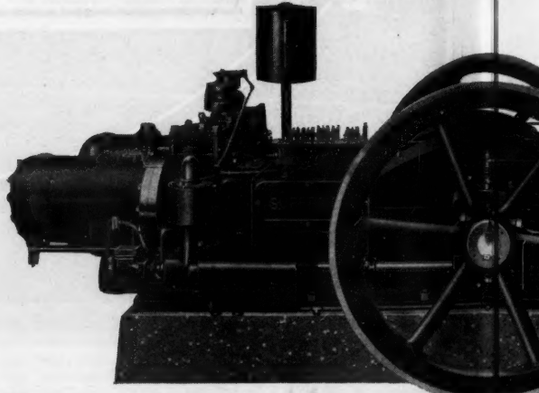
IDEAL
No. 31 PORTABLE ROTARY HOISTING UNIT



National
No. 12 C BAND WHEEL POWER



Superior
COMMERCIAL TYPE GAS ENGINE



Superi
90 H.P. DUPLEX DIRECT DRIV

THE
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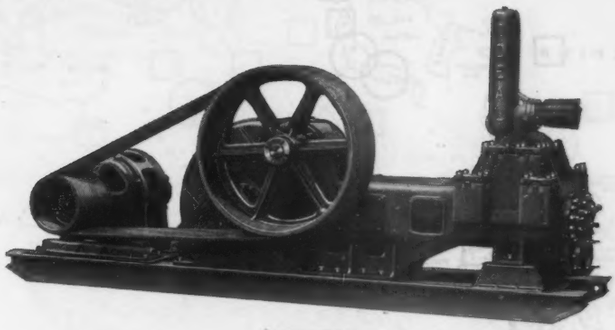
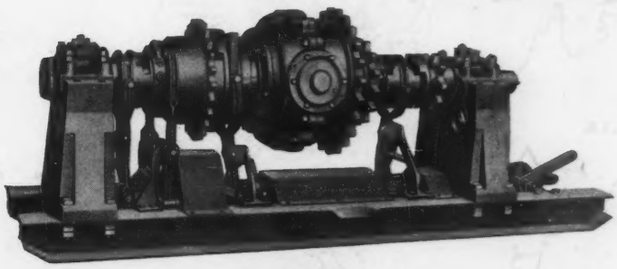
120 BROADWAY, NEW YORK, N.Y., U.S.A. RIVER PLATE HOUSE, FINSBURY CIRCUS AND SOUTH P

al-IDEAL EQUIPMENT

IDEAL
No. 12-25½" ROTARY MACHINE

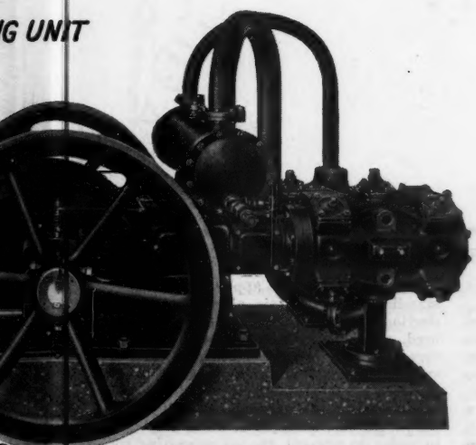


IDEAL
7¼X14" TYPE "B" POWER DRIVEN SLUSH PUMP

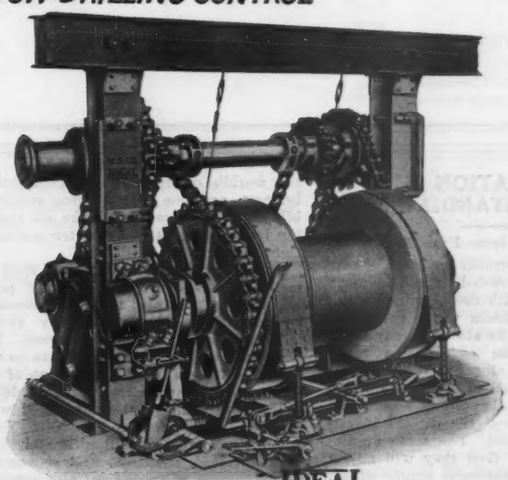


IDEAL
HALLIBURTON DRILLING CONTROL

G UNIT



Superior
CT DRIVEN COMPRESSOR UNIT

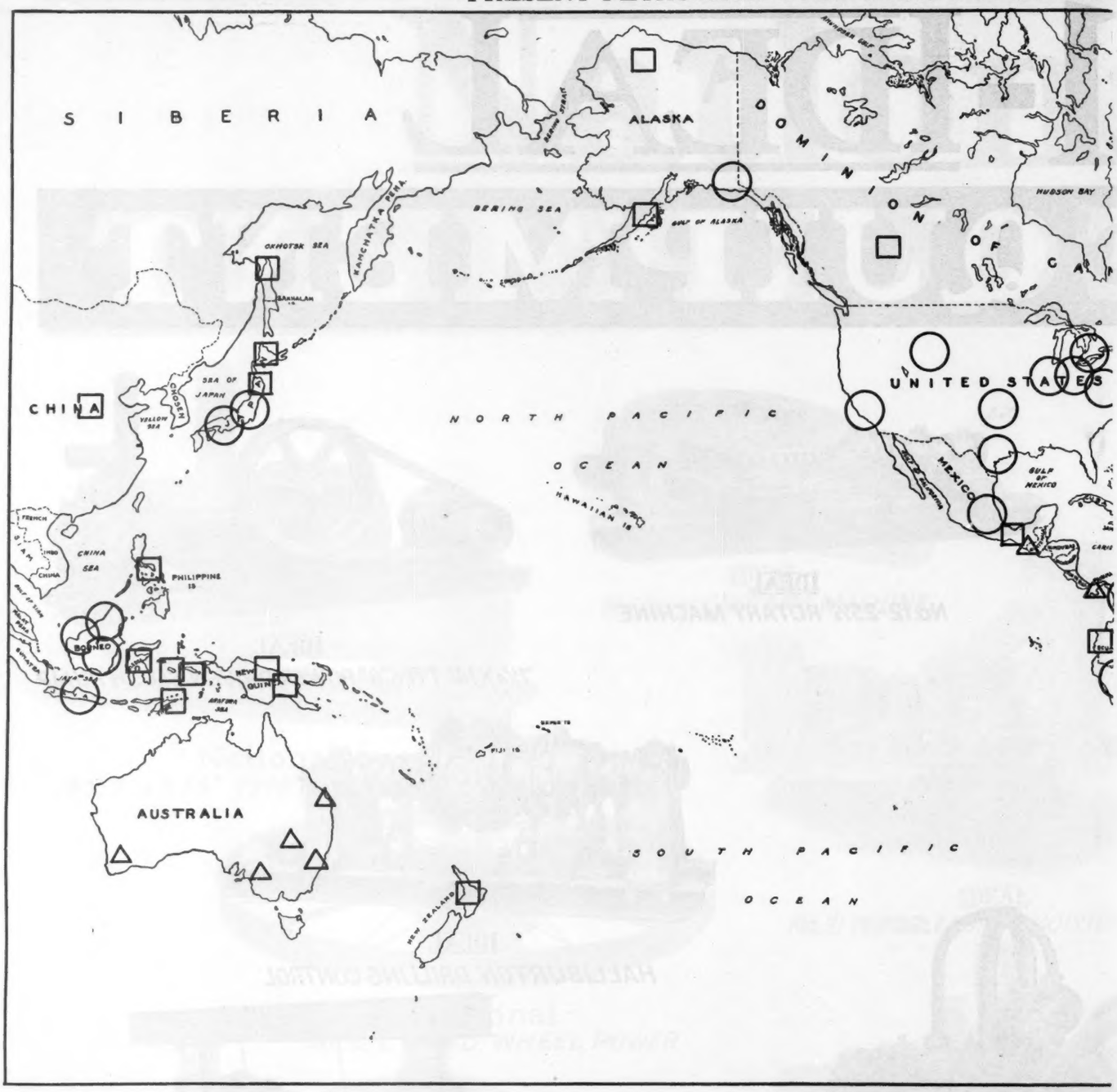


IDEAL
No. 34-26 TYPE "B" DRAW WORKS

THE
AL SUPPLY
PORATION

AND SOUTH PLACE, LONDON, E.C.2 ENGLAND PLOESTI, ROUMANIA MARACAIBO, VENEZUELA

PRESENT PETROLEUM PRODUCING FIELDS AND



RATIONALIZATION IS OUTSTANDING NEED

(Continued from Page 128)

and low prices enormous amounts of capital have to be invested by the industry in order to deal with the large quantities produced; large stocks which cannot be consumed have to be stored in expensive tanks, whereas the earth is a much cheaper and safer storage. When this is followed by a period of small production a great many of the plants become no longer necessary and the capital invested therein is wasted. The same applies to the consumers: first they will adjust themselves to the excessive supply of oil, which naturally involves capital expenditure also for them, and when the period of low prices is followed by one of high prices they, too, will find that they have expended capital uselessly.

Waste of Capital and Reserves

Thus waste of capital and waste of the world's oil reserves are in nobody's interest, and one of the great responsibilities of the leaders in the oil industry is to prevent this by better organization.

It goes without saying that with so many interests involved in this problem it is only natural that the process of rationalization of the industry should make but relatively slow progress. The position, however, became such as to call for radical steps for the protection of the future to be taken without further delay. Consequently all parties interested were called to a conference in New York, which, it is trusted, will ultimately lead to a rational, stabilized and economical production in the principal oil-producing countries of the world. It is a happy omen that the parties concerned have realized their great responsibility and appreciate the necessity to set aside personal interests, if need be at a sacrifice, in order to put an end to such a disordered state of affairs, which is likely to make a chaos of the whole industry.

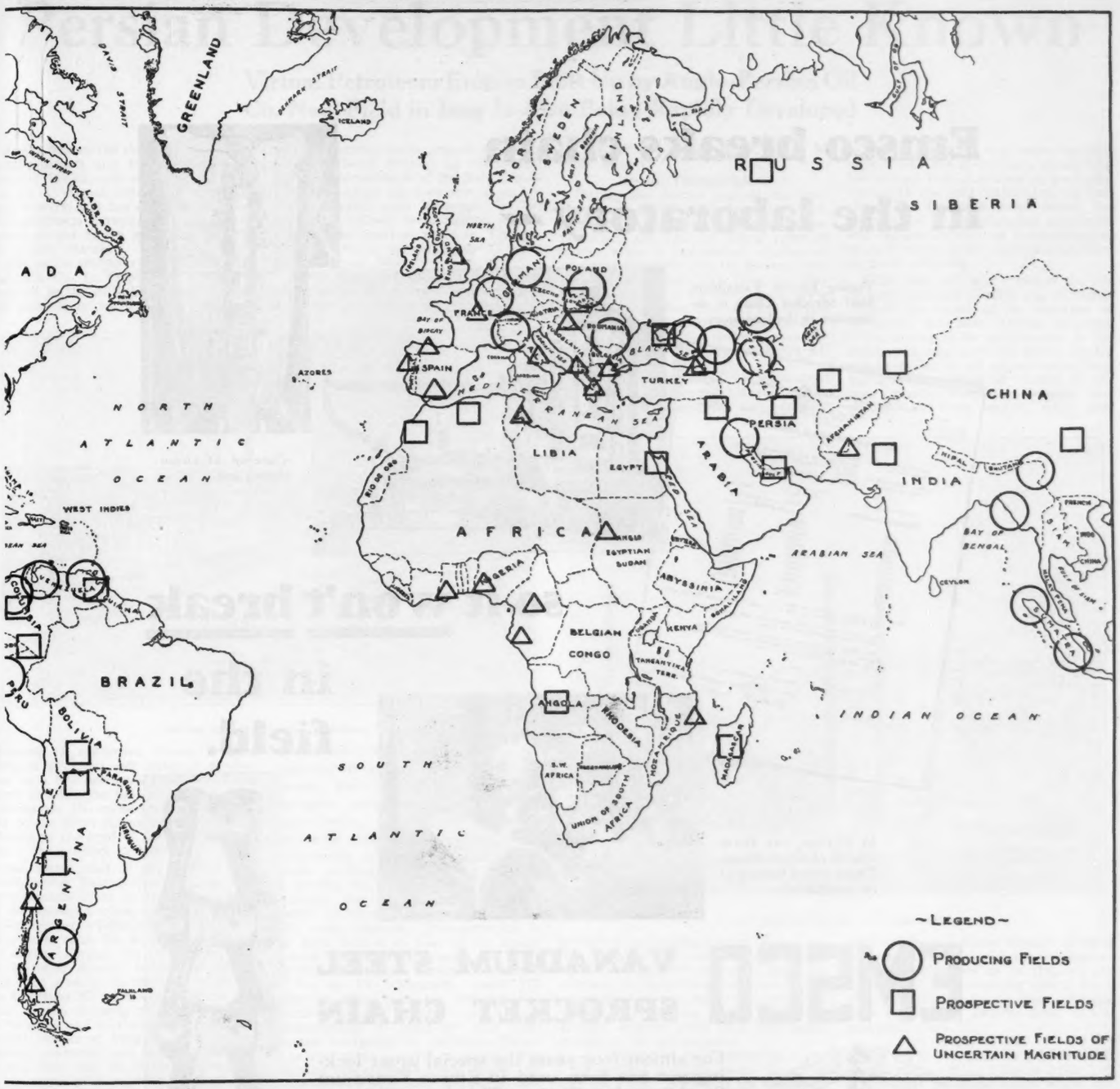
Warning Signs

Signs are even now to be observed which may serve as a warning. One sees drilling methods being applied which aim especially at getting down quickly to the promised oil land without taking any account of the requirements with which a properly drilled well should comply. In this manner new wells are being opened quickly but carelessly, while the natural course would have been to await the time when an actual need for increased production arises and then to bring the wells in by the best known methods. In periods of overproduction a slowly but properly drilled well often does not pay for the expenses incurred. Now, instead of waiting in such a period, recourse is being had to less expensive, but far from proper methods. The consequence will be felt as soon as the oil layers become less productive, when it will be found that owing to the manner in which the well has been drilled, the usual method of pumping cannot be applied. Notwithstanding that there is already overproduction only the present is being considered, no thought being given to the future and efficiency being sacrificed to speed. So long, however, as no fixed rules are laid down for the manner in which the work is to be done, one is obliged to follow the bad example of one's neighbor in order to prevent the oil migrating to his field.

Lack of System in Marketing

The market for the various petroleum products has been subject to great fluctuations, with a falling tendency. Moreover, there is lack of system in the manner in which the various producers are supplying the nonproducing countries with oil and its products. Too often it is seen that one company is shipping to a certain country which could be supplied at less cost by another company more favorably situated geographically; consequently unnecessary expenditure is incurred and the cost raised too high. With

AREAS WHERE OIL IS EXPECTED TO BE FOUND



a view to overcoming these objections the Export Association has been established in America, which is trying by closer co-operation to arrive at a better distribution of the markets, which is primarily in the interests of the consumers.

Dispute With Russia

Though the agreement recently entered into between the Soviet government and one of the British distributing companies was not effected in 1928, it is nevertheless deemed desirable to mention it here on account of its having given rise to so much comment. It has even been represented as if we had drawn back from the standpoint which we have always taken in the matter of Russian oil; our point of view has been clearly explained in previous annual reports and this is still maintained without any variation. In conformity herewith, when an agreement was about to be entered into with the Russians for the purchase of certain quantities of oil f.o.b., we stipulated as a condition that part of the purchase price should be reserved for those from whom the fields producing this oil were taken at the time without any compensation. When the Soviet government raised objections against this condition on the grounds of principle—nowadays also default of payments seems to be a question of principle for some people—we attained our object by stipulating a purchase price below the universal purchase price. This rebate claimed by us and the other companies concerned with this purchase is now being reserved and, as was known to the Soviet Government from the beginning of the negotiations, is destined for the legal owners of the respective oil fields. Anyone who sees in this a change of front is looking only at the words of a contract and not at its purport. It is sufficient to reply by expressing the hope that soon all purchases of Soviet products will see to it that as a result of their contracts compensation is reserved for the rightful owners.

Regarding our own group in particular, the following is to be reported:

According to the latest data our production amounted to:

	Metric tons 1928	1927
Dutch East Indies	3,971,045	3,448,116
Sarawak	751,092	711,756
Egypt	268,461	183,284
Rumania	705,854	593,828
Mexico:		
Corona	528,979	594,753
Aguila	893,681	987,528
Venezuela	7,125,339	4,497,713
Trinidad	65,187	65,841
United States:		
Shell Petroleum Corp., formerly Roxana Petroleum Corp.	3,890,767	2,694,312
Shell Oil Co., formerly Shell Co. of California	3,812,233	3,203,719
Argentina	50,773	17,701
Total	22,063,411	16,998,551

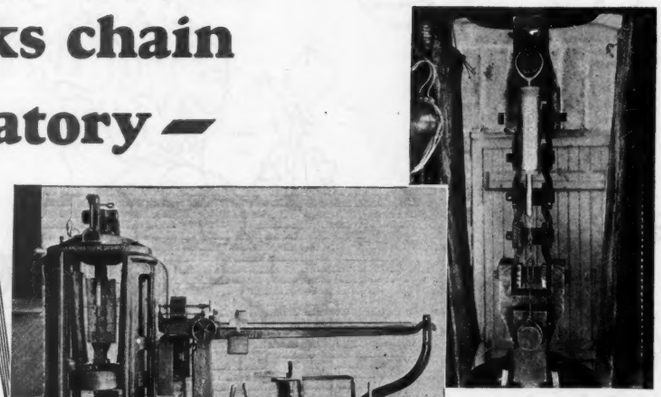
Joint Selling Association

With the exception of Mexico and Trinidad these figures show an advance over the whole line. In our previous report we made mention of the co-operation brought about between the Burmah Oil Co., the Anglo-Persian and the Bataafsche Petroleum Maatschappij on the British Indian market in the form of a joint selling association. Since then our group and the Anglo-Persian have established a joint selling organization for the distribution of petroleum products in a part of Asia and on the east coast of Africa, the newly formed company incorporating the selling organizations already existing in those parts.

Not only is there a steady increase in the consumption of petroleum products, but also new uses are continually being found for them. As regards liquid fuel and Diesel oil for instance, it is characteristic that these products, which, of course, are in ever-increasing demand by shipping companies, are being used more and more in the Diesel engines of locomotives and in numerous factories of the most divergent nature, whilst, moreover, all really modern central heating systems

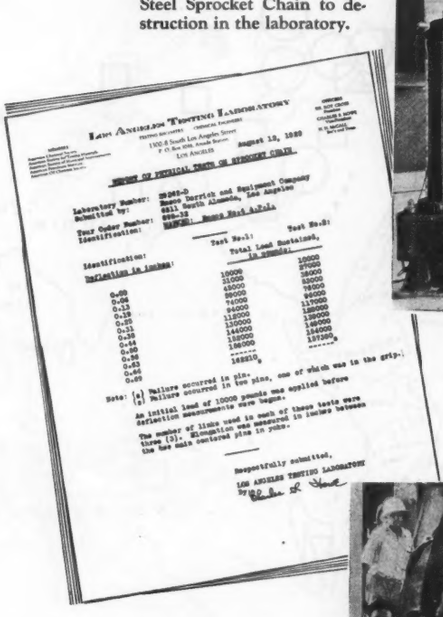
(Continued on Page 165)

Emsco breaks chain in the laboratory—



Close-up of chain during test.

Testing Emsco Vanadium Steel Sprocket Chain to destruction in the laboratory.



LOS ANGELES TESTING LABORATORY

August 12, 1930

REPORT OF PHYSICAL TESTS OF SPROCKET CHAIN

Laboratory Number: 29262-D
Submitted by: Moore Derrick and Equipment Company
6811 South Alameda, Los Angeles
Your Order Number: 6926-12
Identification: MARKED: Moore Std 4-P-Ja

Identification:	Test No.1:	Test No.2:
Deflection in inches:	Total Load Sustained, in pounds:	
0.00	10000	10000
0.04	20000	38000
0.12	40000	78000
0.20	80000	96000
0.28	96000	115000
0.32	112000	130000
0.40	130000	146000
0.48	144000	154000
0.56	158000	157000
0.64	156000	------
0.72	------	------
0.80	148210	------
0.88	------	------
0.96	------	------

Note: (a) Failure occurred in pin.
(b) Failure occurred in two pins, one of which was in the grip.

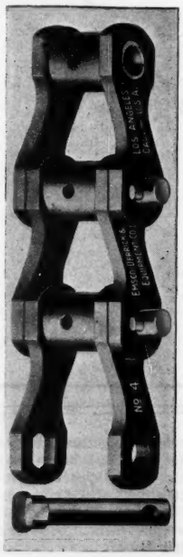
An initial load of 10000 pounds was applied before deflection measurements were begun.

The number of links used in each of these tests was three (3). Elongation was measured in inches between the two nuts centered pins in yoke.

Respectfully submitted,
LOS ANGELES TESTING LABORATORY
By [illegible]

so it won't break in the field.

In Borneo, far from sources of supply, Emsco Chain is used because of its dependability.



No. 4 A. P. I. Chain (Patent Pending)

EMSCO VANADIUM STEEL SPROCKET CHAIN

EMSCO D+B
Products by Steel
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HOUSTON, TEXAS; DALLAS, TEXAS
EXPORT OFFICE: 74 TRINITY COURT, NEW YORK CITY, N.Y.
THE EMSCO ENGINEERING CO. LTD. LONDON
U.S.A.

For almost four years the special upset locking pin has been used in Emsco Vanadium Steel Sprocket Chain. This is an exclusive Emsco feature. Application for letters patent cover this method of locking the chain pin as well as the other superior features of construction found only in Emsco Chain.

Conservative rating of breaking strength—85,000 lbs. for No. 3 and 155,000 lbs. for No. 4.

Write for valuable information and certified laboratory test data on Sprocket Chains.

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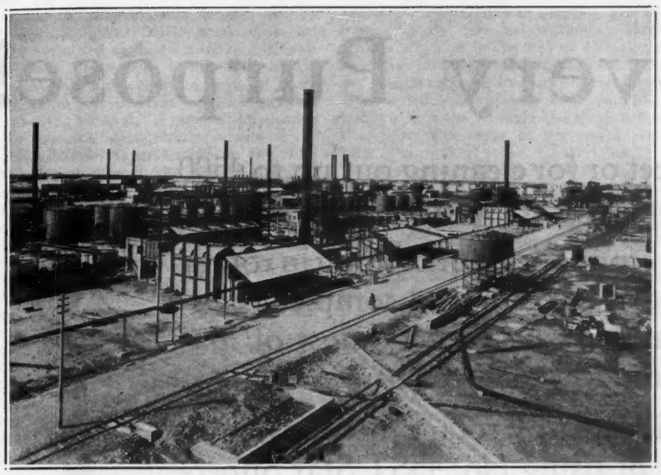
EMSCO STEEL EQUIPPED WELLS ARE SAFE

Persian Development Little Known

Virtual Petroleum Empire Built Up by Anglo-Persian Oil Co. New Field in Iraq Is Also Being Rapidly Developed

Anglo-Persian Oil Co., with one of the world's largest and finest refineries at Abadan, Persia, has succeeded in building up a virtual petroleum empire in that country, and has developed the Persian petroleum industry on a scale little known as yet to the petroleum trade in the United States.

The major activities of the Anglo-Persian Oil Co. in Persia are at present centered in the Naft Khana and Khanaqin districts in northeast Iraq to Gach Qaraguli in southwest Persia, a total distance of about 400 miles of production on a line northwest-southeast. From north to south the field stretches for approximately 150 miles from Godar Landar on the River Karun to the Island of Abadan at the head of the Persian Gulf, where the refinery is located.



Section of Abadan refinery, Persia.

The major pool is the original and world-famous Maidan-i-Naftun Field and its extensions, lying in the northern part of the above-described area, have Masjid-i-Suleiman (Solomon's Temple) for its center, some 35 miles northeast of the ancient Persian city of Shustar. The oil is found directly beneath the foothills that give on to the high range of the Bakhtiari Mountains, which form the great barrier between the desert plains to the south and southwest and the great central plateau of Persia. Between the extreme producing well in the northwest of this field and the extreme producer on the southeast is a distance of approximately 15 miles.

Development in Iraq

Another important field has been discovered at Naft Khana, and is now being rapidly developed. This pool is in Iraq, about 100 miles northeast of Bagdad, with wildcatting under way at numerous points in South Persia. In conjunction with the development of the Naft Khana Field, a refinery has been erected on the River Alwand, near Khanaqin, at the head of a railway from Bagdad and is also on the caravan route to Teheran. This refinery is approximately 25 miles from the new field.

While these are the only areas now under active development in Persia and Iraq, the company holds concessions including practically all Persia, with the exception of certain provinces on the Caspian Sea. The concessions, in the aggregate, cover approximately 500,000 square miles. The company also operates in Albania in the Argentine.

Naturally, in the development of this virgin territory, the company has had to develop its transportation and communities, and this branch of the company's activities has been surrounded with much romance. Transportation to the main field is by boat up the Shatt-el-Arab, and then up through the River Karun, which winds through the desert as far as Dar-i-Khazineh, about 170 miles by river from the refining and shipping point at Abadan. At Ahway, approximately 90 miles by road from Abadan, navigation in the River Karun is broken up by a series of rapids. The company has extensive shops, stores and transshipment equipment located at this point, for the movement by rail and road of passengers and field equipment above and below the rapids. From Dar-i-Khazineh a railway and a road, both of which have been constructed by Anglo-Persian, complete the route to the field by way of the Tembi River, about 35 miles distant.

Desert Transportation

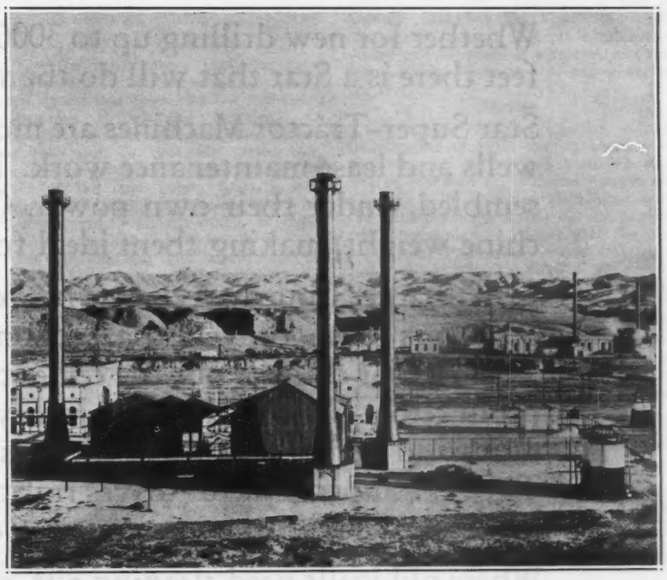
During the greater part of the year the desert between Abadan and Dar-i-Khazineh is excellent for motor transportation, although the heavy rains of winter make it impassable. Utilization of motor transport cuts the journey from Abadan to the main field from five days to eight hours, but the river route, owing to the use of modern steamers and barges, is largely used for the transportation of equipment, due to the obvious economies which this system of transportation affords.

Geological headquarters are maintained at Mohammerah on the Karun River, with an institute equipped with complete geological and cartographical equipment, The company also, at this point, maintains a museum for geological specimens obtained in its drilling operations. These specimens are said to have furnished a valuable contribution to the science of geology, entirely aside from any applications to the oil industry.

Difficulties in Exploration

As outlined in Williamson's "In a Persian Oil Field," describing the company's campaign in Persia, "the work of the geologists and surveyors is frequently an arduous business in Persia. Many of the areas to be explored have never before been visited by Europeans, no maps exist, food and water are scarce or not to be found, and not only roads, but even mule tracks, are nonexistent. Apart from the delicate task of getting on good relations with the local inhabitants, the supply of the food and water needed, the transport of the materials and equipment, and the maintenance of communications in such remote areas constitute problems of great difficulty.

"The task of the geologist in the Masjid-i-Suleiman district was extremely difficult by reason of the character of the earth's crust here. During the period of the folding of the earth's crust in this region, not only were the strata twisted and crumpled in an extraordinary way, but great quantities of certain of the more plastic underlying strata were squeezed out from between other more rigid strata and thrust forward so as to cover younger beds, with the consequence that the deductions as to the run and character of the underlying strata, which may normally be drawn from outcrops, were utterly untrustworthy here. It was geological chaos."

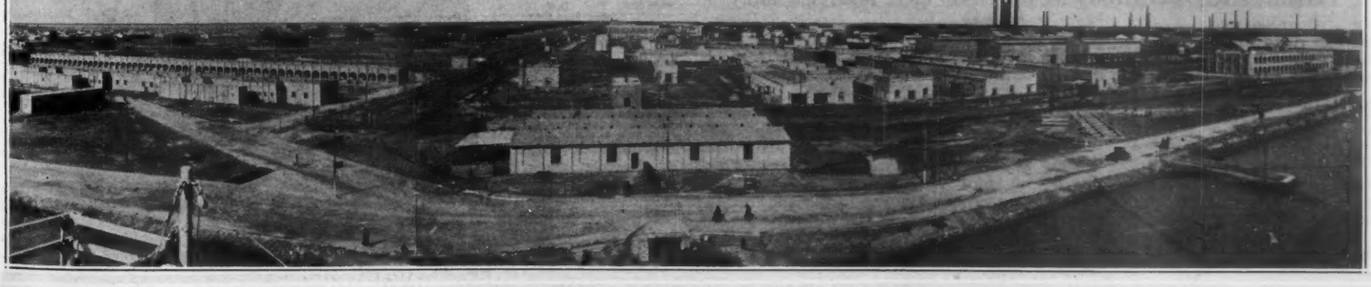


Tembi pumping station in Persian fields.

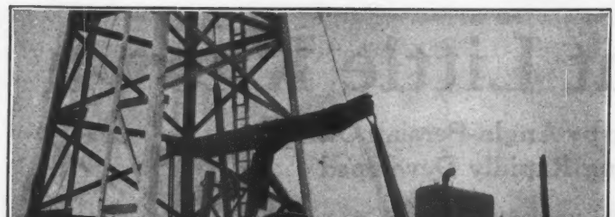
Depth of Oil

The oil in the main field is found at depths varying from 1,000 to 5,000 feet, in the main limestone strata which outcrop in the great hog's back of Asmari Mountain. In the present producing areas the production is coming from two main domes, the Naftun Dome and the Naftak Dome, the rims of which touch

(Continued on Page 253)



Panorama view of the Abadan refinery of Anglo-Persian Oil Co.



Star No. 47 Non-Tractor Machine cleaning out a well in the Anglo-Ecuadorean Oilfield Ancon Field, Ecuador. S. M. L'Etanche, Superintendent of Percussion Drilling, in foreground. The Star machines are operated by Peruvian drillers, imported from the Lobitos Field, in Peru.

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Star Super-Tractor Machines are most economical for drilling in rotary wells and lease maintenance work. They can be moved completely assembled, under their own power. Crawler wheels carry most of machine weight, making them ideal for muddy roads or bad moving.

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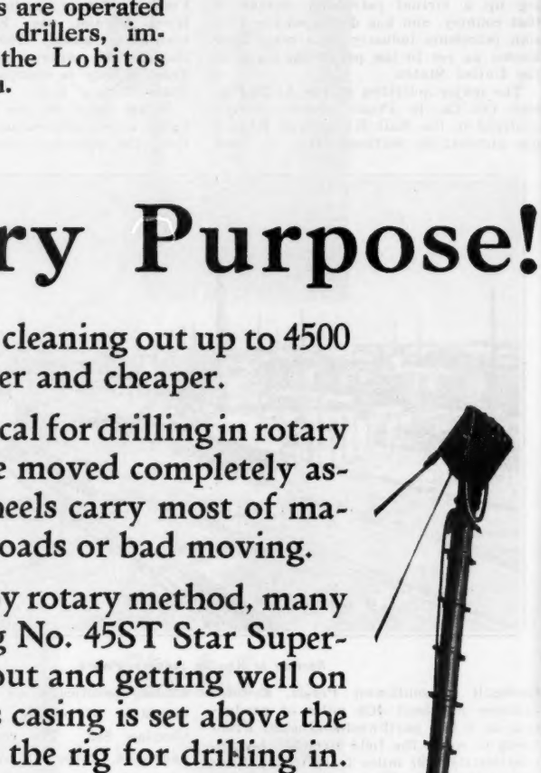
Why not outline your requirements on the coupon below and send it to the Star Drilling Machine Company? Their engineers will recommend the machine best suited for your needs.



Star No. 44 Super-Tractor Lease Maintenance Machine

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OGJ 12-26-29

New Oil Legislation in Other Lands

Many Governments Interested in Nationalization Programs. Situation in Argentina, Colombia and Mexico

By John H. Nelson

Argentina, in common with most Latin American countries, has for several years given serious consideration to petroleum legislation. During 1929 this consideration approached a climax in the attempt of the present federal administration of President Irigoyen to nationalize the petroleum industry. Since this idea of nationalization was an important plank in the Irigoyenist party platform more can be expected on the subject when the new Argentine congress meets next year.

From the congressional debates held in the session just closed, many obstacles were presented against complete nationalization. First, there is the cost of expropriation which will be a very large sum and a serious drain on the Argentine treasury. Second, it seems impossible even for the enthusiastic advocates of nationalization to determine on the relative merits of complete state operation, the formation of mixed or joint companies (part state, part private) or the state concession to private companies for operation. All have been tried in various foreign countries and none have functioned so efficiently as to afford a ready model for Argentine acceptance. Again, the present lawsuit before the supreme court between the Standard Oil Co. of New Jersey and the Province of Salta must settle the old and important question of State or Province versus federal rights. A decision in favor of the Province of Salta might permit provincial control with only nominal federal supervision.

Production Falls Short

The opponents of nationalization point out that even in the Comodoro Rivadavia fields actual production has fallen far short of estimates for each of the last few years while production in other countries showed large gains:

	Estimated Cubic meters	Produced Cubic meters
1925	800.000	600.000
1926	1,300.000	700.000
1927	2,000.000	less than 800.000

The United States increased its 1927 production over 1926 17 per cent, Venezuela 50 per cent, Peru 30 per cent and Argentina only 9 per cent.

In these same debates we find the somewhat unusual argument advanced that "excessive reserves of fuel are dangerous by reason of the advance of science."

Much Russian influence has been noted in all nationalization discussions.

Colombia

The Congress of Colombia closed November 16 without the passage of the new petroleum bill recommended by the group of foreign experts selected by the Colombian Government which in itself appears far from satisfactory to foreign capital. Foreign oil companies are left with the emergency law of 1927, the parts to which they objected having recently been sustained by a decision of the Supreme Court, and with Decree 150 of January, 1928, which still remains suspended pending a decision by the Council of State in the suits filed by the American companies. Because of the change in government the passage of a general petroleum law before 1931 seems improbable.

Aside from the political and legislative factors involved in any scheme of nationalization, which has been proposed from time to time in Colombia, a glance at exploration and exploitation costs there shows the fallacy of using public funds in such a hazardous industry.

In Colombia great sums of money have been invested in activities to develop production of petroleum, and the capital invested has not secured results, at least commercial production.

Until July 1, 1926, the Tropical Oil Co., it is estimated, had invested some $45,000,000 in the development of the De Mares concession. On the same date, the Andian National Corp. had expended about $20,000,000 in the construction of its pipe line of 10 inches diameter, by an extension of approximately 565 kilometers (about 351 miles), the total cost of which amounted to $57,000 a mile, including pumping stations, tanks, land, terminals, privileges, etc. On the above mentioned date, July 1, 1926, the first barrel of petroleum was pumped and delivered by the terminal station at Mamonal to a tanker in the Bay of Cartagena, and the exportation of petroleum from the De Mares concession commenced, after a total investment of about $65,000.000 to make possible the shipment of Colombian petroleum to the world markets.

Other great investments made by the petroleum industry in Colombia reach more than $33,000,000, of which up to date have not obtained even a single barrel of commercial production of oil, notwithstanding that there have been drilled not less than 60 wells by the most modern means and after having used the best elements and geological and technical talents.

Wells Drilled

There is listed a summary of the wells drilled, with indications of the territory, location and the companies that have effected the work.

	Expenditures
Honda Region—La Paz, Guataqui, 5 wells; companies: Transcontinental and Carib	$3,000,000
Aguas Claras, Las Monas, Quebredara La Tigra, Rio Lebrija, 14 wells; companies: South American Gulf Oil Co., John Leonard, Colombian Syndicate..	9,000,000
Land "Joy" near Puerto Santos, 1 well; company: Lobitos Oilfields, Ltd.	500,000
Roman, Nato, Mal Paso, Sur del Magdelena, 5 wells; companies: Granada Oil, Magdalena Syndicate	3,000,000
Carmen de Bolivar and San Jacinto, 5 wells; company: Latin American Oil Co.	5,000,000
San Andres (southern coast Cartagena) 2 wells; company: South American Gulf Oil Co. ..	3,000,000
Valle del Rio Sinu (2 operations), 5 wells; companies: Coastal Oilfields, Ltd., Standard Oil	2,000,000
Turbaco, Turbara, Las Perdices (coasts), 13 wells; companies: Coastal Oilfields, Ltd., Standard Oil	3,000,000
Usiascurf, Galapa, Arenal (coast), 8 wells; company: Richmond Petroleum Co.	3,000,000
Rio de Oro (Catatumbo), 2 wells, companies: Compania Colombia del Petroleo (South American Gulf Oil Co. and Carib Synd.)..	1,500,000
Total, 60 wells	$33,000,000

Half Million a Well

The foregoing shows that the total wells drilled in territories not proven as petroleum fields have cost the interested companies, British and American, an average price over half a million dollars for each well in Colombia (from this, the figures mentioned above include the price of the land leases, lawyers fees, contracts, building of houses, etc., for each operation, all of which is indispensable for each operation).

Notwithstanding this substantial investment they have not obtained sufficient petroleum as to qualify as commercial production. It appears that the petroleum industry in Colombia has suffered more than a dozen failures on a great scale, in comparison with a single exploitation (that of the De Mares concession) that has had good results.

Though, it is hoped that other petroleum deposits in commercial quantities will be discovered, without doubt the discovery will involve, before it is effected, other great investments of money, as experience has demonstrated that the cost to drill a well and to carry out other operations connected with the exploitation, is three times the cost in the United States. The casing that is used in a well in Colombia costs three times the cost in the United States. Besides other high costs there, there is expensive river transportation, the necessity of building roads from the river to the exploitation, the importation of a great quantity of machinery, repair parts, materials, building material, etc., all of which make the survey of petroleum in Colombia even more expensive than in many other regions of the world. Therefore, it may be seriously asserted that only the companies that possess a great capital and skilled and experienced employes can undertake the exploitation of petroleum in the tropics.

Mexico

Ever since the promulgation of the Constitution of 1917, the legal status of petroleum in Mexico has been the subject of controversy. Various decrees enacted in 1916, 1918 and 1921 augmented the apprehensions of the oil companies; and these came to a climax with the passage of the Petroleum Law of December, 1925. The constitutionality of certain articles of the last measure was challenged by the oil companies in suits brought in January, 1926, and again in 1927. The supreme court upheld, in the main, the contentions of the oil companies in a decision dated November, 1927; and as a result the law was

(Continued on Page 161)

V. O. C. Plans to Push Operations

Expected to Increase Drilling in Venezuelan and Trinidad Holdings During Coming Year. Development Under Way

Venezuelan Oil Concessions, Ltd., operating in Venezuela and Trinidad, will close 1929 with production of 3,500 tons of crude per week, or at the rate of 180,000 tons annually, according to A. H. Fellows and W. Taylor, managing directors.

The company's properties in Trinidad consist of 1,131 acres in Palo Seco and 1,107 acres in Fyzabad and in other parts of Trinidad, and in addition Crown oil rights on additional acreage have been applied for.

In Venezuela the company holds under the usual 40-year renewable leases the Rivers concessions of approximately 2,145 acres in the Maracaibo Basin and the Delta concession, a marine strip 275 miles long by 1 kilometer wide, approximately 100,000 acres, on the eastern coast of Venezuela.

Up to June 1, this year, development work in Trinidad had been confined to the company's Fyzabad property, where 14 wells were producing an average of 2,000 tons per month. The production from this property for the first six months was 12,009 tons. Drilling was started on the Palo Seco property on June 1 with two wells already completed yielding about 1,000 tons per week. Five additional wells were nearing completion at last reports and by the end of January, 1930, it is expected that 20 wells will be completed and in production. Thereafter, the company states, drilling will be pushed forward as quickly as possible, and at least three wells will be completed each month.

Development work on the company's River concessions in the Maracaibo Basin in Venezuela has been held back, but it is expected that a drilling program will be launched in this area during 1930. In March, this year, the company entered into a contract with the Creole Petroleum Corp., Ltd. (Standard Oil Co. of New Jersey), whereby that company will drill the company's Delta concession on the Venezuelan east coast at its own risk and expense, it being agreed that after payment of royalties and taxes and cost of drilling out of the first oil produced, the balance is to be divided equally between Venezuelan Consolidated Oilfields and Creole Petroleum, except that out of the 50 per cent allotted to Venezuelan Consolidated Oilfields, the latter company will pay a 2½ per cent royalty to the vendor. Development work is now under way on this concession.

The company's drilling equipment, tankage, etc., in Trinidad, is all of the latest and most approved type. Housing accommodation for the field staff has been erected and is being added to as required. Major H. A. Baker, director of the company, is acting as general manager for the company in Trinidad, and J. F. Swingle, formerly with the Standard Oil Co. of New Jersey, is the company's drilling superintendent.

Venezuelan Consolidated Oilfields, Ltd., has entered into contracts for the sale of all its Fyzabad production and 50 per cent of the Palo Seco production to the Trinidad Leaseholds, Ltd., and the remaining 50 per cent of the Palo Seco production to British Controlled Oilfields, Ltd.

Deliveries to Trinidad Leaseholds, Ltd., from the Fyzabad properties are made through the pipe lines owned by Trinidad Leaseholds, Ltd., which reach the company's properties and deliveries from the Palo Seco fields are likewise made to pipe lines owned or controlled by the Trinidad Leaseholds, Ltd., and British Controlled Oilfields, Ltd., which serves the company's Palo Seco area. The company now has proven locations for 40 wells on its Palo Seco properties.

"With 15 wells producing in Palo Seco by the end of this year," says the company, "and further wells completed in Fyzabad, the total minimum production from the Palo Seco and Fyzabad properties at the end of 1929 should be 3,500 tons per week, or at the rate of 180,000 tons per annum, of a gross value of about £300,000 per annum. This will be increased next year as more wells are brought in on Palo Seco and would, of course, be further increased by any production received from the result of the Creole Corporation's drilling operations on the Delta concession in Venezuela."

Use 1,900,000 Barrels Gasoline Daily

World Consumption This Year Estimated at 488,000,000 Bbls. United States Exporting Over 53,000,000 Bbls.

By John H. Nelson

It is estimated that during 1929 the world will consume 488,000,000 bbls. of gasoline or at the rate of approximately 1,900,000 bbls. a day.

Of this amount, the United States will consume probably 375,000,000 barrels and export in excess of 60,000,000 barrels which export will constitute about 48 per cent of the world's consumption outside of the United States. These estimates are based on the experience of the two previous years which give a world consumption of 439,000,000 barrels in 1928 and 387,000,000 barrels in 1927.

That gasoline consumption abroad may be expected to continue at its present rate or even an increasing rate is perhaps more clearly understood when we realize that in 1928 for the first time in our economic history the value of automotive exports exceeded the value of all petroleum exports and was in excess of $850,000,000. As a nation we export as many cars today as we manufactured in 1913.

The export business of one corporation, the General Motors Export Co., was almost $300,000,000 or a million dollars for each working day. On any given day $20,000,000 worth of their products are afloat bound for foreign markets. Doing $100,000,000 worth of business per year in Europe this same corporation has become the fifth largest industrial enterprise in all of Europe. Its investment in foreign plants is in the neighborhood of $100,000,000.

Consumption by Countries

An analysis of consumption by individual countries for the year 1927, the latest year for which complete figures are now available, together with a statement of automobile registration for the same period, world crude oil production by geographical areas and persons per automobile as a possible general index of future trends in automobile utilization are given below.

TABLE A
ESTIMATED WORLD CONSUMPTION OF GASOLINE 1927*
(In thousands of barrels of 42 U. S. Gals.)

		Auto-mobile regis-tration‡	Persons per auto-mobile‡
NORTH AMERICA—			
Canada	10,398	951,157	10
Mexico	1,209	57,139	272
United States	296,807	23,262,183	5
Alaska	166	1,948	28
Total	308,580	24,272,427	
CENTRAL AMERICA—			
British Honduras	12	188	255
Costa Rica	29	1,360	384
Guatemala	35	2,473	1,200
Honduras	12	469	1,648
Nicaragua	17	493	1,325
Panama	30	4,584	109
Salvador	38	1,673	1,000
Total	173	11,240	
WEST INDIES—			
Bahamas	15	998	55
Barbados	16	1,221	133
Cuba	1,127	44,937	79
Dominican Rep'blic	90	3,985	250
Haiti	34	2,043	1,130
Jamaica	88	5,727	160
Martinique	8	1,637	153
Trinidad	125	3,918	78
Total	1,503	64,466	
SOUTH AMERICA—			
Argentina	2,874	266,030	38
Bolivia	33	1,985	1,310
Brazil	1,487	136,000	264
British Guiana	19	1,763	172
Chile	386	19,271	203
Colombia	389	10,236	676
Ecuador	46	1,542	1,297
Paraguay	1	1,018	1,000
Peru	280	10,525	520
Uruguay	393	34,575	49
Venezuela	189	12,650	239
Total	6,102	495,595	
EUROPE—			
Austria	611	23,673	282
Belgium	1,177	108,000	73
Bulgaria	54	1,843	2,975
Cyprus	11	1,069	291
Czechoslovakia	822	39,950	354
Denmark	1,196	83,900	41
Estonia	38	1,603	698
Finland	415	25,038	140
France	10,174	956,000	40
Germany§	8,743	456,000	137
Greece	244	13,885	492
Hungary	268	13,001	650
Irish Free State	552	36,763	81
Italy	2,328	158,600	254
Latvia	41	1,892	975
Lithuania	33	1,064	2,021
Malta	18	1,363	165
Netherlands	1,358	73,894	120
Norway	404	32,350	86
Poland	432	21,922	1,369
Portugal	249	21,809	284
Roumania	752	20,819	824
Russia	694	18,673	7,755
Spain	1,733	176,075	126
Sweden	1,472	109,522	55
Switzerland§	814	53,000	74
Turkey	4	7,000	1,908
England and Wales	21,125	1,071,000	41
Yugoslavia	194	10,475	1,147
Total	55,956	3,540,183	
AFRICA—			
Algeria	430	30,550	200
Angola	28	1,654	2,483
Belgian Congo	109	3,500	2,412
Egypt	287	21,890	650
Eritrea	3	108	3,730
Abyssinia	2	109	91,743
French Morocco	292	227	13,753
Cambia	1	128	1,560
Gold Coast	138	5,469	378
It. Somaliland	1	114	8,872
Kenya & Uguanda	100	1,331	107
Madagascar	17	1,301	2,778
Mauritius	27	2,855	138
Mozambique	14	960	3,200
Nigeria	93	4,427	4,082
Northern Rhodesia	8	†	†
Portuguese Guinea	3	†	†
Sierra Leone	4	443	3,478
Southern Rhodesia	64	5,966	†
South West Africa	33	1,331	107
Sudan	39	1,472	4,395
Tanganyika	30	†	†
Tripoli	17	†	†
Tunis	113	5,350	424
Union of South Africa	1,079	101,200	75
Zanzibar	5	†	†
Total	2,937	190,385	
ASIA—			
Aden	7	690	80
Sarawak	2	70	3,670
British Indian	1,347	95,684	3,333
Ceylon	206	14,417	348
China	314	20,464	21,062
Korea	56	2,809	6,950
French Indo China	166	13,746	1,455
Irak	48	2,825	1,124
Japan	1,500	54,654	1,525
Netherlands East Indies	225	25,194	120
Palestine	46	2,196	2,257
Persia	500	6,560	1,520
Philippine Islands	339	28,810	407
Siam	111	6,672	1,460
Syria	60	5,337	506
Total	4,927	280,128	
AUSTRALIA & NEW ZEALAND—			
Australia	4,861	423,521	14
New Zealand	1,372	134,215	10
Total	6,233	557,736	
World total	386,411	29,412,160	

*Based on figures of United States Bureau Foreign and Domestic Commerce.
†Not available.
‡Figures from United States Bureau of Foreign and Domestic Commerce.
§Figure includes benzol consumed with gasoline as fuel.

Gasoline Yield

A number of interesting deductions can be made from the above tables.

If we take the total world production of crude oil for 1927 at 1,261,073,000 bbls. and subtract from that amount the production of the United States for that year, 901,129,000 bbls., plus a net import of 42,539,000 bbls. of crude oil we find that 317,405,000 bbls. of crude oil were available for refining outside of the United States.

Now if we take the domestic consumption of gasoline in the United States for 1927 at approximately 296,000,000 barrels, add to it our exports of some 43,000,000 barrels for the same years we get a total of 339,000,000 barrels as the United States' contribution to a total estimated consumption for that year of 387,000,000 barrels leaving some 48,000,000 barrels of gasoline to be supplied from the 317,000,000 barrels of crude oil available outside of the United States.

This required an approximate average gasoline yield of only 15.14 per cent.

Looking at it in another way, if this 317,000,000 barrels of crude oil available outside of the United States had been so refined as to give a gasoline yield of 28.70 per cent no exports of gasoline from the United States would have been required to supply the 91,000,000 barrels of gasoline consumed outside of the United States.

Carrying the same argument advanced by R. C. Holmes, president of The Texas Company, before the recent meeting of the Federal Oil Conservation Board, in favor of increased yields of gasoline from crude oil in the United States as a conservation measure, to the foreign fields and we see that an easily achievable increased gasoline yield from foreign crude oils could be made to displace, either in whole or part, an export of over 50,000,000 bbls. of gasoline.

It is apparent from the appended tables that United States exports of gasoline in 1927, 43,334,000 bbls., constituted 47.5 per cent of all the gasoline consumed in the world outside of the United States which totaled approximately 91,000,000 barrels. When the large refining capacity outside of the United States controlled by American interests is considered, it is easily seen that American capital supplies or controls probably in excess of 80 per cent of the gasoline consumed in the world outside of the United States.

The leading gasoline consuming countries outside of the United States in the order of their relative positions are, the United Kingdom, Canada, France, Germany, Australia, Argentina and Italy. These seven countries together with the United States apparently consumed 91.7 per cent of the world's gasoline in 1927.

In Great Britain and Ireland the gasoline consumption of 1928 shows an increase of 373 per cent over that for 1920. Since 1920 the increase in consumption over the previous year has been as follows:

	Per cent
1920	19.8
1921	56.6
1922	17.5
1923	16.9
1924	18.0
1925	22.1
1926	20.3
1927	12.6
1928	12.6

For the year 1928 Great Britain and Ireland secured their gasoline from the following sources:

Western Hemisphere—	Per cent
United States of America	61.0
Mexico	1.0
Venezuela	7.0
Trinidad	1.0
Total	70.0
Eastern Hemisphere—	
Rumania	2.0
Russia	6.0
Persia	7.5
Dutch East Indies	3.5
Total	19.0

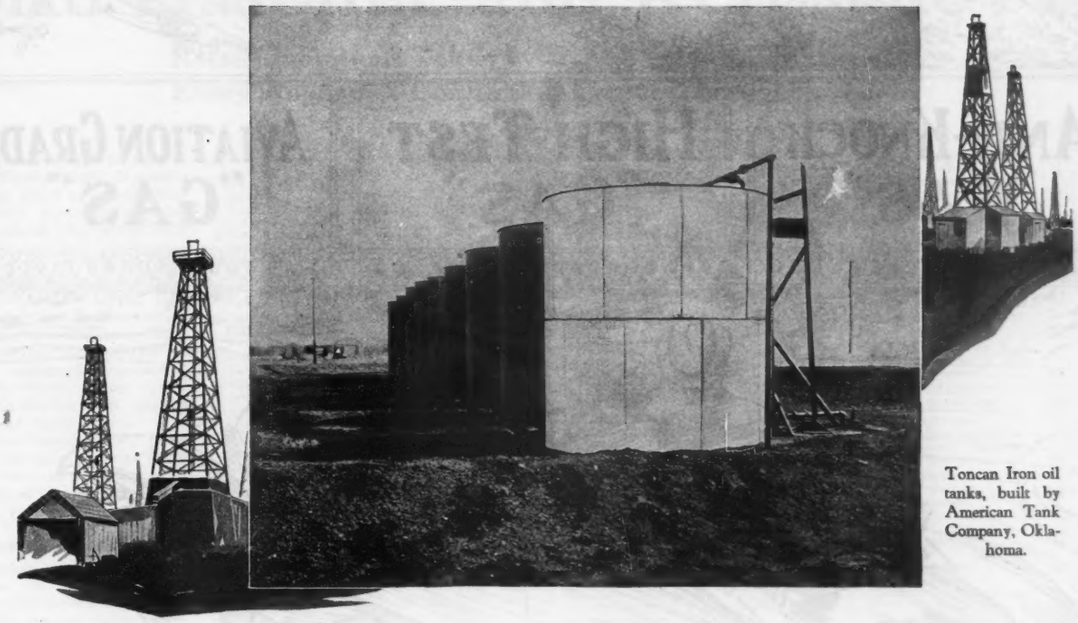
The remaining 11 per cent is made up of gasoline refined domestically from imported crude oils.

In Canada the 1928 consumption is

(Continued on Page 224)

SERVICE STATION FRANKFORT-ON-MAIN, GERMANY

—By Ewing Galloway, N. Y.



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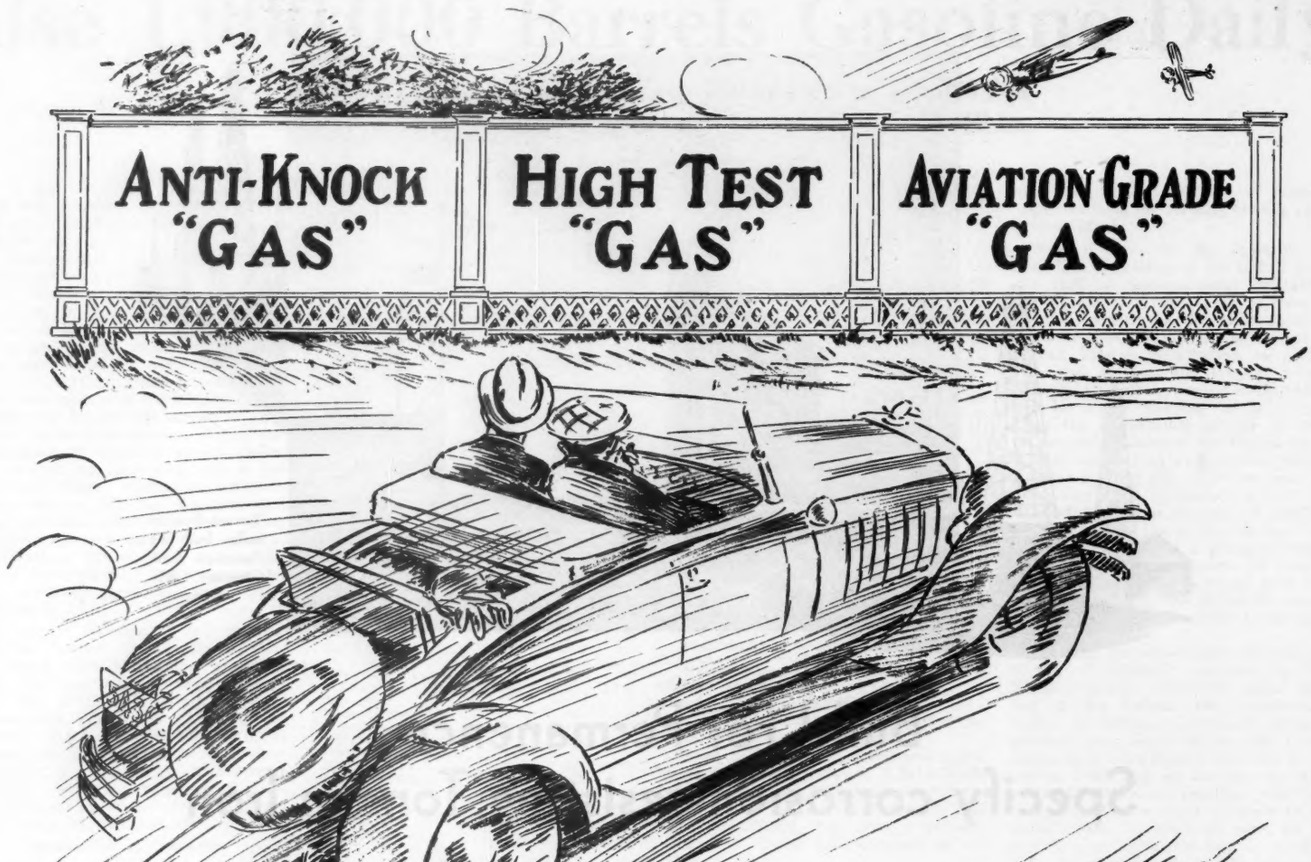

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World Gasoline and Kerosene Prices

Retail Quotations Taken by Department of Commerce in Every Important Consuming Center Throughout Globe

By John H. Nelson

Tabulations taken from the records of the Bureau of Foreign and Domestic Commerce give the retail prices of gasoline and kerosene in important consuming centers throughout the world each three months.

The prices quoted for the different foreign countries cannot be used for comparative purposes without taking into consideration the various factors which tend to make inequalities in prices. These factors include distance from source of supply, quantity consumed, transportation costs, import duties, excise taxes, distribution and marketing costs, quality of products sold and many others.

For instance, even though a local price quoted in foreign currency remains fixed or constant, variations in exchange rates may show a marked change when the price is converted to American cents per gallon.

Local Consumer Costs

However, the prices quoted are a fair, general indication of local consumer costs, relative gasoline prices throughout the world, and the general price movement in this commodity.

A casual study of this table indicates that the highest range of prices are found at points of minimum consumption and that these prices are the direct result of excessive transportation costs. Constantly increasing import tariffs, and taxes in many countries of large consumption, result in these duties and taxes, in many cases, such as France, practically equaling the laid down cost of the product in French ports.

Prices of kerosene are interesting to note. In many cases they equal or exceed gasoline prices. Aside from the nationally increased price for this commodity in all refining centers during the past few years, closer study shows that kerosene, has, over a period of years, also become a vehicle for taxes, special duties and monopolies and a much larger proportion of the retail price is made of taxes than is true of gasoline.

Import duties and taxes on oil products abroad are changing with such rapidity as to make any tabulation of them useless before it is in print.

WORLD RETAIL GASOLINE PRICES
1929 (cents per gallon)
(Figures from U. S. Bureau of Foreign and Domestic Commerce)

Country and city—	Jan. 1	Apr. 1	July 1	Oct. 1
Angola:				
Loanda	37	39	..	..
Algeria:				
Algiers	..	..	..	28
Australia:				
Sydney	45–48	45–48	46–48	46–48
Argentina:				
Buenos Aires	..	..	39–51	35–48
Austria:				
Vienna	29	29	27–29	25
Azores:				
St. Michaels	..	..	56–57	..
Bahamas:				
Nassau	..	..	30	..
Bolivia:				
La Paz	60	59	64	65
Brazil:				
Rio de Janeiro	..	..	42.7	42.7
British Guina:				
Georgetown	..	..	..	61
Bulgaria:				
Sofia	38	35	34	..
British West Indies:				
Barbadoes	..	..	..	43
Canada:				
Toronto*	24	23	29–32	†28–31
Montreal*	25	23	30–33	†29–32
Winnipeg*	26	25	29	‡28
Vancouver*	30	29	30	‡30–32
Chile:				
Santiago	39–44	39–44	..	39–44
China:				
Peking	..	..	36	..
Tientsin	..	..	36	..
Hankow	..	..	30	..
Shanghai	aviation gasoline	37	28	28
Hong Kong	35	35	35	35
Chosen:				
Seoul	28–33	24–33	26–32	29–34
Colombia:				
Bogota	..	..	..	62
Costa Rica:				
San Jose	44–50	44–50	45–50	44
Cuba:				
Habana	28–33	28–33	28–33	28
Note: Motor alcohol in Habana is 43 cents per gallon.				
Czechoslovakia:				
Prague	35	35	28	28
Denmark:				
Copenhagen	26–30	26–30	30	30
Dominican Relic:				
Santo Domingo	40	40	..	..
Ecuador:				
Guayaquil	Aviation gasoline is 48&54 cents			34–41
Estonia:				
Tallinn	25–34	26–28	..	..
Ethiopia:				
Addis Ababa	..	..	..	86–91
Finland:				
Helsinki	..	28	31.5	29
Fiji Islands:				
Suva	46	46	46	..
France:				
Paris	..	..	32	..
Lyon	..	..	35–37	36
Strasbourg	..	..	38	36
French West I'd's:				
Martinique	44	43.5	..	..
Germany:				
Berlin	..	..	28.8	..
Hamburg	..	..	27.9	..
Breslau	..	..	31.3	31.5
Cologne	..	..	29.7	..
Leipzig	..	..	33.7	..
Greece:				
Athens*	42	43	38.7	39
Guatemala:				
Guatemala	..	..	55	39
Aviation gasoline sells for 47 cents per gallon.				
Gold Coast:				
Accra*	..	..	60	..
Haiti:				
Port au Prince	35	35	..	..
Hungary:				
Budapest	27	27.6	25.8	..
Honduras:				
Tegucigalpa	50	51.4	..	..
India:				
Calcutta*	30	33	33	33
Irak:				
Baghdad	28	29	29–41	30–36
Irish Free State:				
Dublin	..	29.4	35.4	35.4
Italy:				
Rome	..	..	39.7	..
Jamaica:				
Kingston	47	46.6	..	..
Japan:				
Tokyo	28	27.7	22–29	..
Kenya:				
Nairobi*	..	68	68	..
Latvia:				
Riga	..	35	35–38	38
Lithuania:				
Kovno	..	35	34.5	35.5
Luxemburg:				
Luxemburg	..	..	..	30–33
Liberia:				
Monrovia*	..	43	..	..
Mexico:				
Mexico City	..	..	29.2	..
Guadalajara	..	..	33.6	33.4
Aviation gasoline in Guadalajara sells at 42.2.				
Vera Cruz	..	..	..	31.8
Mazatlan	..	..	..	28.5
Morocco, Spanish:				
Tangier	32–44	32–44	44.4	..
Morocco, French:				
Casablanca	30	30	30–38	..
Netherlands:				
The Hague	27	27	27	27
Netherlands E. I.:				
Batavia	..	..	36.3	..
Netherland W. I.:				
Curacao	27	27	27–35	..
Newfoundland:				
St. Johns*	30–34	30–34	35–40	..
New Zealand:				
Wellington*	..	..	46–48	..
Nicaragua:				
Bluefields	41	41	41–50	42
Norway:				
Oslo	27	27	27.2	27
Panama:				
Panama City	32	32	32	32
Persia:				
Teheran*	62	..	..	62
Peru:				
Lima	§40–43	§40–42	§40–43	§40–43
Philippine Islands:				
Manila	38	38	38	38
Poland:				
Warsaw	35	35	34.8	35
Porto Rico:				
San Juan	27	27	27	28
Portuguese E. A.:				
Lourenco Marques*	42	42	42	42
Rumania:				
Bucharest	23	23	23	23
Salvador:				
San Salvador	..	..	52	..
Society Islands:				
Tahiti	30	30	30.4	32
Spain:				
Madrid	32	32	32	32
Sweden:				
Stockholm	..	..	30.4	30
Switzerland:				
Zurich	38	40	40	40
Syria:				
Beirut	37	31	32	32
Turkey:				
Constantinople	31	31	..	33–35
Union of South A.:				
Johannesburg	..	55	55	55
Burban	..	40	40	40
Cape Town	..	40	40	40
United Kingdom:				
London*	38	38	38	35
Scotland*	41	41	41	38
Venezuela:				
Caracas	..	..	32–40	..
Yugoslavia:				
Belgrade	52	53	53	45

*Imperial gallon.
†Price includes tax of 5 cents.
‡Price includes tax of 3 cents.
§Includes federal tax of 12 cents.

WORLD RETAIL KEROSENE PRICES
1929 (cents per gallon)
(Figures from U. S. Bureau of Foreign and Domestic Commerce)

Country and City—	Jan. 1	Apr. 1	July 1	Oct. 1
Angola:				
Loanda	31	31	..	..
Algeria:				
Algiers	..	..	..	21
Australia:				
Sydney	..	..	42.5	42.5
Argentina:				
Buenos Aires	..	..	33.9–36.4	33–36
Austria:				
Vienna	19	20	14	13
Azores:				
St. Michaels	..	..	34	..
Bahamas:				
Nassau	..	..	26.2	..
Bolivia:				
La Paz	53	54	60	61
Brazil:				
Rio de Janeiro	..	..	..	30
British Guiana:				
Georgetown	..	..	..	72
Bulgaria:				
Sofia	25	24.6	22	22
British West I'd's:				
Barbadoes	..	..	22	22
Canada:				
Toronto*	26	26	30–37	29–34
Montreal*	27	27	30–32	29–32
Winnipeg*	25	25–28	29	28
Vancouver*	24	23	28	28
Chile:				
Santiago	34	34	36.5	36.2
China:				
Peking	..	..	19–23	..
Tientsin	..	..	18–22	..
Hankow	..	..	22–24	..
Shanghai	..	..	..	18–22
Hong Kong	23	22	23	23
Chosen:				
Seoul	32	32	32	34
Colombia:				
Bogota	..	..	..	58
Costa Rica:				
San Jose	45	45	45	45
Cuba:				
Habana	30	30	30	25
Czechoslovakia:				
Prague	25	25	24	23
Denmark:				
Copenhagen	23	23	24	25
Dominican Rep.:				
Santo Domingo	30	30	..	..
Ecuador:				
Guayaquil	..	..	..	30–37
Estonia:				
Tallinn	17–18	17–18	..	18
Ethiopia:				
Addis Ababa	..	..	..	46–51
Finland:				
Helsinki	§15.2	20	20	20
Fiji Islands:				
Suva	49	49	49	..
France:				
Paris	..	..	..	..
Lyon	..	..	34	34

(Continued on Page 157)

GARAGE AND FILLING STATION IN ALGERIA

—By Ewing Galloway, N. Y.

American oil for sale in the back country oasis town of Bouira. Algeria has fine network of hard surface trunk line roads and much of the country's travel is by motor cars and trucks. Filling stations have been placed along the main roads in Algeria, Tunis and Morocco by the French authorities who built the roads with native labor and modern machinery.

Rumania's Industry Showing Progress

Growing Production of Both Crude and Refined Products and Material Broadening of Export Volume Reported

Rumania's oil industry has shown continued progress during 1929, with growing production of both crude and refined products, and a material broadening in export volume. Crude production in Rumania for the first five months of 1929 aggregated 1,839,975 metric tons, contrasted with 1,678,362 metric tons in the corresponding period last year. Detailed figures on Rumanian production to date are lacking, but reports from abroad indicate that the output has continued to run ahead of comparable 1928 totals.

Export movement of Rumanian petroleum products has shown a steady increase this year. Exports of all products for the first seven months of the year were 1,626,590 tons, contrasted with 1,153,389 metric tons in the same months of 1928. Details follow:

	Metric tons 1929	1928
Gasoline	467,729	366,345
Refined oil (kerosene)	432,196	395,830
Lubricating oil	34,275	34,238
Gas oil	454,522	.....
Fuel oil	237,868	366,976

Refining facilities in Rumania have been greatly modernized, a number of cracking installations having been made. The effect of this is discernible in the falling exports of fuel oil, and the heavy movement of gas oil into export channels during the first seven months of the year.

Rumanian Refineries

According to department of commerce figures, there are 60 petroleum refineries in Rumania, not all of which are active. The principal refining centers at Ploesti and Campina, 35 and 50 miles, respectively, north of Bucharest. The total capacity of Rumanian refineries is 4,845,900 metric tons annually. During 1926 a total of 3,089,777 metric tons of crude was treated in Rumanian plants, with a total output of 3,031,428 tons of refined products. Following is a list of the principal refining companies. These companies, in 1926, the last year for which detailed data are available, treated about 97 per cent of the total amount of crude refined in Rumania.

Company	Crude oil treated	Output
Astra Romana	529,780	525,467
Steaua Romana	409,013	408,977
Romano-Americana	362,492	358,193
Vega	352,588	335,516
Aurora	264,014	259,496
Standard (Petrol Block)	172,091	168,912
Unirea	154,082	151,944
Orion	138,047	135,796
Aquila Franco-Romana	126,989	125,346
Colombia	96,435	92,777
Petrolul Bucuresti	80,604	79,539
Redeventa	73,599	70,002
Saturn	57,317	56,397
Cometa	51,352	50,311
Intrep. Petr. I. Grigorescu	25,114	24,447
Lumina	23,872	23,391
Photogen	19,229	18,726
Baneasa	16,979	16,700
Petrol Latina	16,894	16,537
Pallas	15,022	14,435
Norris	14,016	13,736
Total	2,999,529	2,946,615

Refinery Capacities

The following 33 refineries, as compiled by the department of commerce, have a total capacity of 4,845,900 metric tons of crude petroleum per year. To this should be added the total annual capacity of some 25 or 30 smaller refineries, which will probably not exceed 30,000 metric tons. No data relative to the individual capacities of these plants are available.

(In metric tons)

Refinery, location—	Annual crude capacity	Tank capac. Crude	Tank capac. Refined
Vega, Ploesti	648,000	39,400	47,930
Astra Romana, Ploesti	540,000	35,328	118,139
Romana-Americana, Telajen	520,000	56,000	84,600
Steaua Romana, Campina	510,000	19,000	148,000
Standard (Petrol Block), Ploesti	400,000	20,000	22,000
Aurora (Creditul Minier), Baicoi	300,000	13,500	21,750
Redeven a, Ploesti	250,000	11,000	24,000
Aquila Franco-Romana, Ploesti	216,000	14,178	23,991
Speranta, Ploesti	180,000	6,900	22,000
Orion, Ploesti	180,000	30,000	33,000
Colombia, Cernavoda	144,000	6,100	18,229
Petrolul Bucuresti, Bucuresti	109,500	6,600	15,000
Saturn (Petrol Block), Buzau	108,000	2,500	12,500
Cometa, Ploesti	100,000	2,800	16,500
Petrol Latina, Plopeni	65,000	4,000	4,000
Ind. de Petr. Orsova-Tileagd, Orsova	60,000	5,000	11,600
Lumina (Petrol Block), Ploesti	60,000	2,000	8,000
Fratia (Roumania-Petrolifera), Ploesti	60,000	13,800	15,000
Ind. de Petr. Orsova-Tileagd, Tileagd	50,000	5,500	13,627
Dacia Rom. Pe.r. Sy. (Ltd), Ploesti	50,000	4,800	8,500
Intrep. Petr. I. Grigorescu, Targoviste	39,000	2,200	8,110
Sociatatea Industrialade Petrol, Dej	36,000	3,500	3,000
Baneasa (Petrol Block), Bucuresti	36,000	2,000	4,000
Photogen, Brasov	33,500	3,000	6,500
Noris, Ploesti	29,000	2,000	4,000
Carmen-Petrol, Targoviste	25,000	1,200	4,000
Pallas, Galati	24,000	1,200	4,500
Venus (Rom. Belg. de Petrol), Romniku Sarat	18,000	1,000	1,500
Moldonaphtha, Lucasesti	18,000	500	1,800
Danube Oil Tr. Cy. (L.d), Onesti	14,400	465	580
Uranus, Ploesti	12,000	500	700
Samuel Glodenstein, Buzau	6,500	200	850
Coroana, Mizil	4,000	4,000	3,000
Total	4,845,900	320,171	710,966

Cracking in Rumania

Since the compilation of the above data, however, many of the principal plants have been greatly modernized, cracking equipment having been installed by several of the larger plants. In the following table is given the latest available details relative to the use of cracking processes in Rumania:

Company, Refinery location—	Units	Rated capacity in bbls. per day
Aquila Franco-Romana Ploesti	1	1,000
Astra Romana, Ploesti	5	5,400
Omnium Int. de Petroles ("Colombia"), Cernavoda	1	1,000
Steaua Romana, Campina	2	3,600
Totals	9	11,000

New Mining Law

The new mining law in Rumania, abolishing all the discriminations against foreign investments in Rumanian industries in general, and especially in the petroleum industry, is expected to result in further expansion in Rumanian petroleum operations. Notwithstanding the potential possibilities of the Rumanian oil industry, relatively minor progress has been made in new development in recent years. National resources, in the form of necessary capital, were lacking, and the nationalistic provisions of the old mining law served as an effective barrier to the entry of foreign capital. At the end of 1928, the actual total capital investment in the Rumanian oil industry was estimated at $170,000,000 to $195,000,000, about the capitalization of a single fair sized American independent oil company. Under the provisions of the new law, however, considerable foreign development is in sight.

Official data on Rumanian oil progress is slow in coming out, and for this reason, a comprehensive summary of 1929 operations, for the full year, is not possible at this time. J. Rives Childs, American Consul at Bucharest, in a recent report covering 1928 operations in the Rumanian petroleum industry, said in part:

Period of Progress

"The year 1928 was generally a period of progress and improvement for the Rumanian oil industry in comparison with preceding years. The industry, nevertheless, still is confronted with numerous difficulties, principally financial and commercial. Total crude production during the year amounted to 31,690,391 bbls. or 2.4 per cent of the world output, against 27,263,300 bbls. in 1927—a new record for the Rumanian industry. The percentage of increase, however, was not as high as for years preceding 1927. There was a marked stagnation in drilling activities in 1928 and it is reported that the total number of meters did not exceed the 250,000 drilled in 1927. The terms of the mining law of 1924 discouraged drilling on unexplored fields. As it did not require concessionnaires to explore conceded lands, Rumanian companies generally were reluctant to undertake drilling in new fields so long as the opportunity remained to exploit old ones.

"As in previous years, 98 per cent of the crude output of Rumania was produced in 1928 by joint stock companies. Approximately 90 per cent of the total was supplied by nine companies, representing largely foreign capital, European and American, a distinct change from the years immediately following the passage of the 1924 law, when its provisions in favor of Rumanian enterprises caused a rapid increase in their share of the total production of crude oil.

Drilling Activities

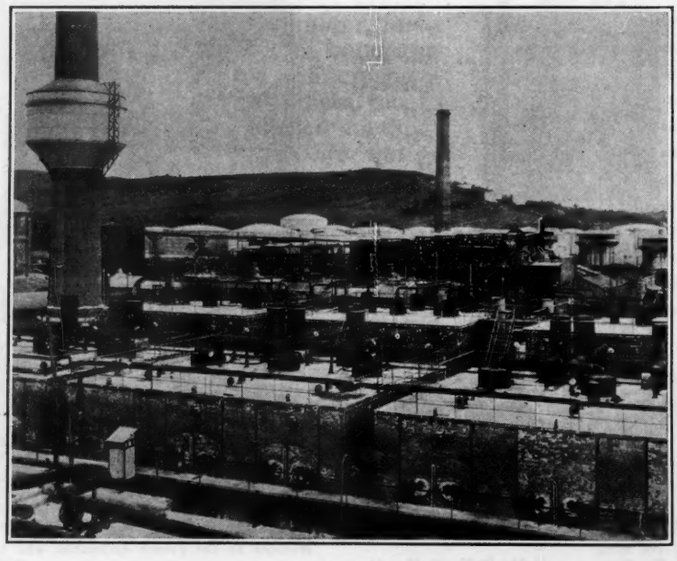
"A similar tendency was evident in drilling activities. As late as 1927 the drilling of the Rumanian or nationalized foreign companies increased, owing to the exceptionally rich state oil lands received as concessions, while drilling by foreign companies declined. In 1928, however, the proportion was changed, largely in favor of the foreign companies.

"Following the increase in crude production there was a corresponding augmentation in the output of the domestic refineries, which in 1928 treated 30,522,440 bbls. of crude compared with 26,257,620 in 1927. The Rumanian refineries have a total refining capacity of approximately 34,817,000 bbls. Increasing difficulties for refineries and other petroleum interests arose during 1928 as the result of the marked decline in fuel oil prices. As the majority of the domestic refineries are not equipped with cracking plants the supplies of fuel oil on the local market

(Continued on Page 224)

ARBANASHI FIELD IN RUMANIA

BIG REFINERY AT CAMPINA, RUMANIA



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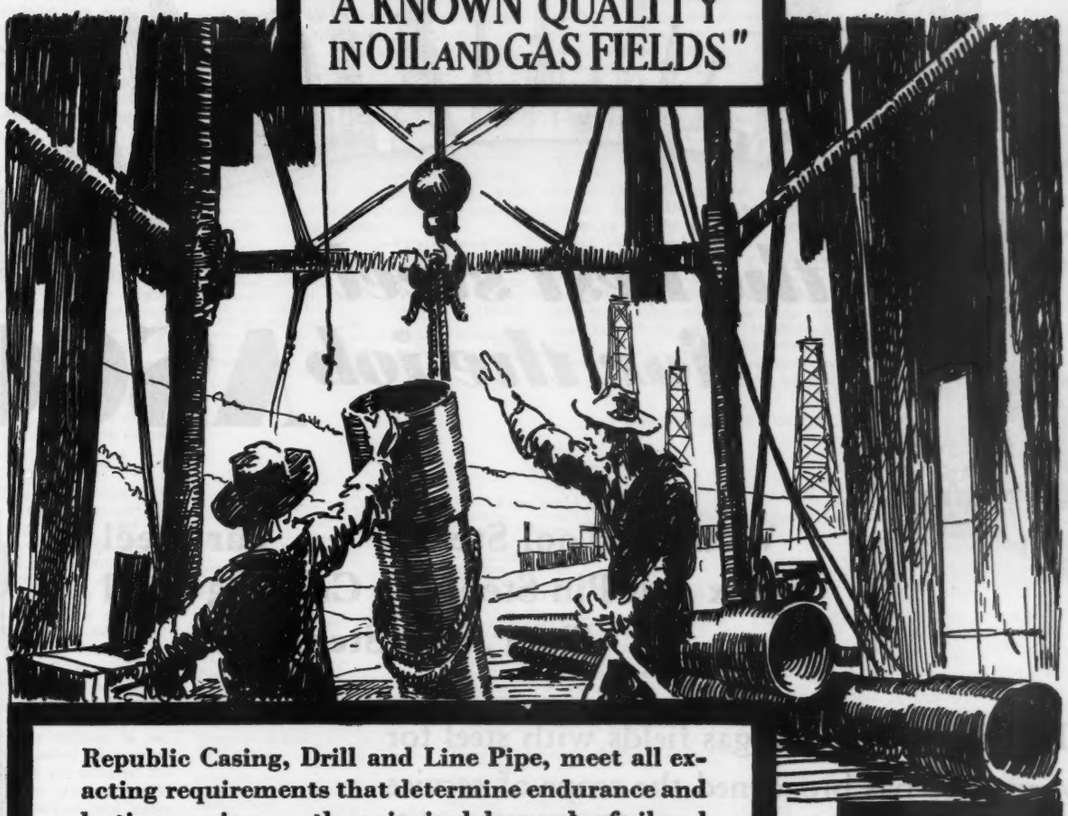

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Unfavorable Oil Situation in Poland

Consumption Increasing But Exports Declining While Production Fell Off and Refining Unprofitable

The current year has not been a favorable one for the Polish oil industry so far as home production and refining is concerned but the consumption of petroleum products in Poland has continued to increase. Exports of principal petroleum products from Poland fell off during the first six months of the year, and while data for the closing half of 1929 are not yet available, reports from Poland indicate this decline has continued during the latter half of the year.

Aside from the French-owned Malopolski group, the principal producing and refining unit in Poland, earnings of the principal companies in Poland have been unfavorable, notwithstanding the higher prices for petroleum ruling in the Polish market this year.

Production of crude oil in Poland for the first six months of the year totaled 2,342,746 bbls., a decline of 9 per cent from the 2,574,334 bbls. produced in the corresponding period of 1928. The decline was due in considerable measure during the first three months of the year to the exceptionally severe weather conditions which prevailed, but the recovery which had been looked for in the second quarter failed to materialize.

Drilling Costs Higher

Drilling costs in Poland are much higher than those in the United States, steam and natural gas being largely used for power in field operations. Electricity, however, is now coming into wider use, the Premier Co. having put a central power plant into operation at Tustanowicz last year. According to a report from Assistant Trade Commissioner Gilbert Redfern at Warsaw: "Methods ordinarily regarded as obsolete appear to be required by the difficult formations in Galicia. Rotary equipment is still practically unknown in Poland, perhaps not so much because rotary drilling is unsuited to Galician formation as because the Polish mills are not yet adapted for the manufacture of this type of equipment. Most of the pole-tool and cable equipment now used is manufactured in Poland, and the local industry is favored with a high tariff protection. All the casing used by the Polish industry likewise is furnished by domestic mills. The high royalties demanded by Galician landowners also present a serious obstacle to the more extensive use of the drill, and legislation has been threatened for a year or more for the purpose of enforcing lower charges, if necessary, by changing the organic law governing ownership of subsoil rights. Such legislation has not yet been brought forward, however."

Exploration Work

The Pioneer Co., a co-operative exploration enterprise capitalized by members of the Polish oil cartel, is now conducting a search for new sources of crude production. This exploration work has been largely financed by the larger profits derived from oil sales on the high price basis authorized by the Polish Government for this purpose.

Natural gas production showed an increase for the first six months of 1929, being 229,805,000 cubic meters, as contrasted with 234,549,000 cubic meters during the corresponding months of 1928. Recovery of natural gasoline for the first six months of 1929 in Polish fields was 142,509 bbls., compared with 127,030 bbls. in the same months last year. There were 19 casinghead gasoline plants in operation at the middle of the year.

There were 2,739 oil and gas wells under exploitation in the Galacian fields on June 30, this year, contrasted with 2,690 as of December 31, 1928. The increase, however, was due principally to the deepening of old wells rather than new completions or drilling operations.

The accompanying table, compiled by the Department of Commerce, shows the condition, location, and capacity of the 52 Polish refineries.

Refining Operations

A total of 28 refineries was in operation as of June 30, 1929, and these plants ran during the first six months of the year 2,201,577 bbls., with a total yield of 2,001,818 bbls. of finished products. This showed a decline of 10.8 per cent from the 2,244,886 bbls. of refined products obtained from a crude run of 2,430,106 bbls. during the first half of 1928. Production of principal refined products during the first six months of 1929, with comparison for the corresponding months in 1928, was as follows:

	First six months	
	1929	1928
Gasoline, bbls.	395,178	354,345
Kerosene, bbls.	706,397	802,256
Lubricants, bbls.	331,139	336,383
Fuel oil, bbls.	440,323	496,347
Paraffin wax and candles, lbs.	41,270,112	46,404,625
Asphalt, metric tons	8,312	10,258
Greases and miscellaneous products, metric tons	9,905	16,767

These figures do not include gasoline yield from natural gas.

Domestic Consumption

Domestic consumption of petroleum products in Poland during the first six months of the year showed an increase of 13 per cent, totaling 1,289,029 bbls., contrasted with 1,140,720 bbls. in the similar period last year. The principal increases were in fuel oil, gasoline and kerosene, which registered gains of 53,465 bbls., 57,519 bbls. and 38,374 bbls., respectively. Domestic consumption figures for the first half of the year included 34,342 bbls. of imported products, principally lubricating oils and asphalt.

Owing to the relatively high level of prices in Poland, due to the operations of the cartel, the steady gain in domestic consumption has been an important factor in improving financial returns of the principal companies operating in that country. Under present conditions, with Polish prices above the world level, Polish companies would probably be glad to be relieved by the cartel of their export quotas. With the practical certainty that domestic requirements will continue to increase and that crude production will not increase much above present levels in Poland, the point where domestic requirements and production will balance is believed to be gradually approaching.

Stocks

Stocks of refined products held at Polish refineries on June 30, 1929, amounted to 1,688,610 bbls., a gain of 117,915 bbls. over the holdings on June 30, 1928, and the largest storage ever recorded for Poland. The increase was brought about principally by a decline in exports in the half year. Stocks of crude oil, however, fell off from 641,655 bbls. on June 30, 1928, to 515,711 bbls. on June 30, this year. The drop in crude stocks was attributed to the policy of maintaining refinery operations at a steady level.

Exports of Products

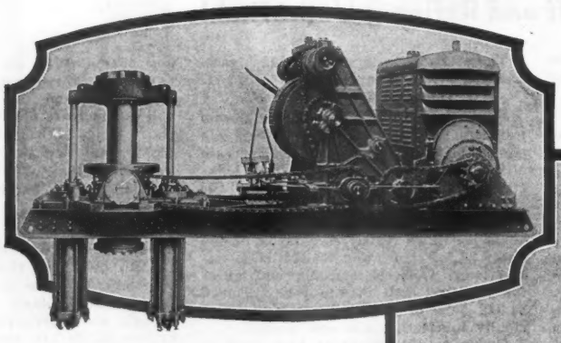
Exports of refined products from Po-

(Continued on Page 165)

REFINERIES IN POLAND

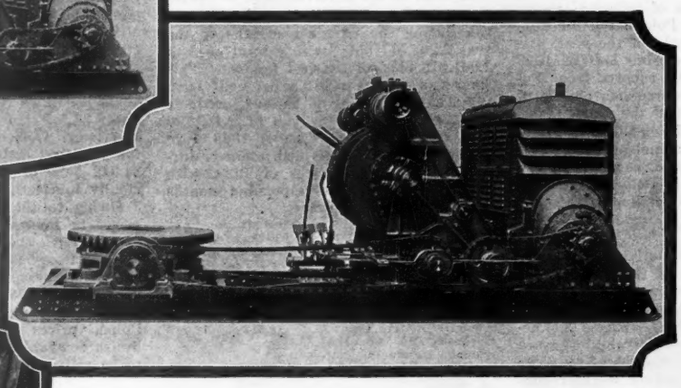
Location	Firm name or ownership	Equipment	Source of crude oil	Annual manufacturing capacity (metric tons)	Crude oil run in 1927 (metric tons)
Drohobycz	"Polmin" Panstwowa Fabryka Olejow Mineralnych.	Renewed in 1919-1923	Royalty	180,000	125,934
Limanowa	Tow. Naftowe "Limanowa" Ska. z. ogr. odp.	Old	Own	120,000	67,054
Czechowice	Vacuum Oil Co., S. A.	Old	Purchase	*100,000	33,812
Drohobycz	Galicyjskie Tow. Naft. "Galicja"	Old	Own	*100,000	79,332
Trzebinia	Polskie Zwiazkow Rafin. Olejow Skalnych S. A.	Old	Own	80,000	58,738
Glinik Marjampolski	Gal. Karp. Naft. Tow. Akc., formerly Bergheim & McGarvey.	Old	Own	70,000	52,073
Dziedzice	Gal. Karp. Naft. Tow. Akc., formerly Bergheim & McGarvey.	Old	Own	†60,000	68
Nieglowice by Jaslo	"Jaslo" Zakl. Przemysl. Naftowe Gartenberg & Schreier.	Old	Purchase	60,000	30,370
Libusza by Gorlice	Standard-Nobel 2 Polsce S. A.	New; constructed in 1920-1923	Own	60,000	35,432
Jedlicze	Galic. Karpack. Noftowe Tow., formerly Bergheim & McGarvey.	New; constructed in 1920-1923	Own	50,000	36,407
Ustrzyki Dolne	"Fanto" (Ltd.)	Renewed in 1920-1921	Own	*50,000	48,404
Drohobycz	Polskie Zwiazkow Rafinerje Olejow Skalnych S. A.	Renewed in 1920-1921	Own	40,000	29,200
Drohobycz	"Nafta" (Ltd.)	Renewed in 1921-1923	Own	40,000	35,173
Krosno	Fabryka Nafty W. Staniarski	Old	Own	†30,000	
Peczenizyn	Polskie Zwiazkow Rafinerje Olejow Skalnych S. A.	Old	Own	†20,000	
Zniesienie by Lwow	Ska. Akc. dla Przemyslu Naft. i Gazow Ziemnych.	Renewed in 1920-1924	Own	18,000	13,688
Myketyce by Stanislawow	Pierwsza Stanisl. Fabr. Nafty Oleju Masz. i Benz. E. Ch. Griffl.	Old	Partially own or purchase.	15,000	4,570
Ligota Pszczynska	Michal Fink & Ska. Tow. Handl. Przem. Ska. Akc.	Renewed in 1926	Purchase	14,000	340
Drohobycz	Ska. Akc. "Nafta"	Renewed in 1921-1922	Own	†14,000	
Stanislawow	Rafin. Nafty i Fabr. Olejow Maszyn. Bcia Haber, Sp. z. o. o.	Old	Own	12,000	5,517
Stryj	Rafinerja Nafty i Fabr. Olejow Maszyn. M. G. Reich i Ska.	Old	Purchase	†12,000	
Skawina	Rafin. Skawinska. Zakl. dla Przem. Ol. Skaln. Griffel & Co.	New; constructed in 1924	Purchase, partially own.	10,000	10,430
Grabowiec by Stryj	"Eka" Rafinerja Olejow Miner Sp. z. o. o.	Old	Own	10,000	60
Stroze	S. A. "Kaukaz"	Old	Own	†6,000	
Drohobycz	Pol. Przem. Naft. "Rom" Sp. Akc.	Old	Own	†6,000	
Targowiska (Iwonicz)	Tow. dla Przeds. Gorn. "Tepege"	Old	Own	†6,000	283
Dereszyce (Drohobycz)	Dr. Bacher i Ska. Rafin. Ol. Min.	Old	Purchase	†6,000	
Sambor	Krajowa Raf. Nafty i Fabr. Chem. "Prymeta" Ska. z. o. o.	Old	Purchase	†6,000	
Dereszyce (Drohobycz)	Dereszycka Raf. Ol. Min. i Fabr. Prod. Chem. Dr. J. Hausmann.	Old	Purchase	6,000	3,400
Kolomyja	"Polska Nafta" Ska. Akc.	Old	Own	†6,000	
Gleboka (Sambor)	Raf. Nafty "Gleboka" Sp. z. o. o.	Old	Purchase	†6,000	
Lisko (Sanok)	Zach. Malopol. Przem. Naftowy	Old	Purchase	6,000	170
Hrubicze (Drohobycz)	"Gasolina" Ska. Akc.	Old	Purchase	†6,000	350
Dolzka (Bolechow)	Raf. Ol. Min. Backenroth i Ska.	Old	Purchase	†6,000	70
Borysław	Inz. Baltuch, Dr. Liebman, Mermelstein & Ska.	Old	Purchase	6,000	2,400
Modryez (Drohobycz)	Madryeka Rafin. Ol. Min. Gartenberg Zucker & Ska.	Old	Purchase	†6,000	
Hubicze (Drohobycz)	Hubicka Raf. Nafty, Kornhaber, Erdheim, Mendelsohn, Gottsman.	Old	Purchase	6,000	2,414
Kolomyja	J. S. Friedmann	Old	Purchase	†6,000	
Kleczany	Malopol. Tow. dla Przem. Naft. "Kleczany" Sp. z. o. o.	Old	Purchase	6,000	100
Wierbiarz (Kolomyja)	Raf. Wierbiarz ad Fabr. Przetw. Olejow Skalnych.	Old	Purchase	6,000	3,060
Krechowice	Krechowiecka Rafinerja Nafty "Lam & Ska."	Old	Purchase	6,000	600
Borysław	Borysławska S. A. Przetworow Oleju Skaln (Schutzmann).	Old	Purchase	6,000	870
Narworna	Tow. Naft. "Segil" Sp. z. o. o.	Old	Own	6,000	4,010
Stroze	Backenroth & Landau	Old	Purchase	†6,000	
Gorlice	J. P. Madajski	Old	Purchase	†6,000	
Gorlice	S. Tumidajski	Old	Purchase	†6,000	
Gorlice	Ehrenberg & Holender	Old	Purchase	6,000	
Gorlice (Ropica Pol)	Ch. Gleicher	Old	Purchase	†6,000	
Drohobycz	Zacharjasz Handel	Old	Purchase	†6,000	
Drohobycz	Jacob Aszkenazy	Old	Purchase	†6,000	
Drohobycz	"Spogen" (formerly Kreppel)	Old	Purchase	†6,000	
Hubicze	Dr. M. Rappaport	Old	Purchase	†6,000	

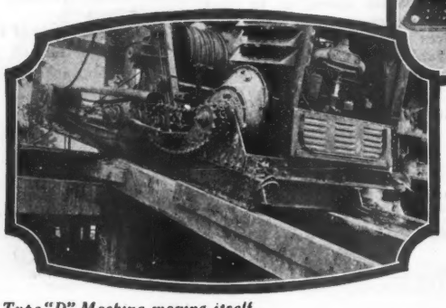
*Equipped with cracking plants. †Inactive as of June 30, 1928.



Type "D" Machine with 40-ton Hydraulic Rotary feed.

Type "D" Machine with 16-in. regular production table.





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—if so a Sheldon-Burden Type "D" Rotary Drill will save you money in drilling costs.

THE engine, draw-works, and rotary table are all mounted on the same structural steel base. This saves money in transportation and rigging up costs.

The weight of the complete unit with its gasoline engine is only 6 tons, yet it has drilled several wells over 4000 feet and finished the hole with a 6-inch bit. While the above performance is far beyond its rated capacity and we do not recommend the machine for such service, it does show its strength and durability.

By means of a catline or its own hoisting line, it can move itself with its own power on to or off of the derrick floor. In some cases it has moved itself and other equipment from one location to another by its own power. Its structural steel base makes an excellent sled for this purpose and of course, its power is sufficient to drag any reasonable weight.

The planetary gear clutch on the draw-works drum can disengage or engage the drive to the drum instantaneously and at any engine speed. This eliminates much of the time lost in clutch movements necessary to operating the usual rotary draw-works. It also permits the use of Gasoline Engine or Diesel Engine drives without the necessity of a reverse gear.

Type "D" Machine with a hydraulic feed rotary table is an excellent coring machine for use with diamonds or diamond substitutes.

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SHELDON HYDRAULIC ROTARY TABLES

DUE TO A LACK OF PHOTOGRAPHIC CONTRAST BETWEEN TEXT AND BACKGROUND, THIS PAGE DID NOT REPRODUCE WELL.

To check EVAPORATION

and CORROSION

COAT

YOUR TANKS WITH

METALHESIVE

[redacted]

[redacted] please [redacted] this sheet
[redacted] delivery for your
[redacted] practically no heat.

OVER

PROOF

of the Efficiency of Aluminum Foil

The ability of Aluminum Foil to check evaporation is dramatically demonstrated by figures shown below. These are the results of comparative tests conducted by a large operator.

[Due to methods used in determination of losses errors up to 20% may exist.]

TYPE OF TANK	TEMPERATURE VARIATIONS Taken on August 15, 1929 — a typical summer day			LOSSES [BY EVAPORATION]
	Tank Top Temp. °F	Vapor Space Temp. °F	Oil at one-foot Level °F	Bbls. lost during 90-day period June 20-Sept. 18
Unpainted Tank	High 155 Low 73 Varia. 82	High 132 Low 75 Varia. 57	High 110 Low 93 Varia. 17	375
Aluminum Paint Roof and Shell	High 123 Low 76 Varia. 47	High 115 Low 76 Varia. 39	High 101 Low 88 Varia. 13	240
Aluminum Painted Shell Insulated Roof Quilted Type	High 107 Low 84 Varia. 23	High 107 Low 78 Varia. 29	High 94 Low 91 Varia. 3	140
ALUMINUM FOILED ROOF Aluminum Painted Shell	High 120 Low 81 Varia. 39	High 110 Low 77 Varia. 33	High 98 Low 89 Varia. 9	81

The Importance of Correct Application

The perfection of aluminum foil on tanks is absolutely dependent on the use of an adhesive coating that suits the purpose. The St. Louis Surfacer & Paint Co.—with a background of over 26 years experience in developing protective coatings for the oil industry—is prepared to recommend the type of adhesive that is required upon receipt of information concerning installation in question.

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Soviet Reports Record Year in Oil

Important Gains Registered in Production, Refining and Exporting, According to Chairman S. G. Bron of Amtorg

The fiscal year 1928-1929, an all-time record year for production, was a year of expansion in all branches of the Soviet oil industry, with important gains registered in production, refining, and exporting operations, according to Saul G. Bron, chairman of the board of directors of the Amtorg Trading Corp., American representatives of the U. S. S. R. One of the outstanding features of the year was the partial "Americanization" of the Soviet oil trade through the introduction of American methods and equipment in both producing and refining, as well as the acquisition of a number of American technical men to work in an advisory and supervisory capacity with the Russian oil trusts. The outlook for the next several years favors continued development of the Soviet oil industry, with American equipment and materials continuing to play a large part in this expansion program.

Details of production of both crude and refined products, export shipments, and refinery operations are given in the accompanying table. In commenting on the Russian situation, in an interview with The Oil and Gas Journal, Mr. Bron said:

Statement By Mr. Bron

"The past year was a record one for the Soviet oil industry, and the present year (fiscal year 1929-1930) promises to continue the rapid expansion shown by its predecessors. The oil production during the fiscal year ended September 30, 1929, amounted to 13,700,000 metric tons and an additional 295,000 tons of casinghead gasoline was produced. This production, which was an all-time record for Russia, was 17.6 per cent above that of the preceding year and was 49 per cent above the output of the last pre-war year, 1913. Drilling operations showed a corresponding increase, going from 261,800 meters in 1927-28 to 319,200 meters last year.

"A notable feature of the year was the increase in refining operations, especially in the production of kerosene and gasoline, to meet the enlarged foreign and domestic demand. Gasoline exports last year amounted to 1,019,000 tons compared with 759,000 tons in the preceding year, thus increasing by over a third, while kerosene exports advanced from 692,000 to 766,000 tons in the corresponding period.

"The total exports for the year, 3,618,500 metric tons, were almost four times the 1915 figure of 948,000 tons and were two-thirds again as great as the highest exports ever attained in any pre-war year (1904). The largest item on the export list was fuel oil, amounting to 1,387,000 tons as against 915,000 tons in the preceding year.

Domestic Consumption Grows

"Along with the steady gain in exports, there has been a considerable increase in the internal consumption of Soviet oil products, the total figures for internal sales of refined oil products last year and the preceding year amounting to 7,775,000 and 6,771,000 tons respectively. Kerosene sales on the home market increased from 1,190,000 tons in 1927-28 to 1,566,000 tons last year, a large part of this increase being attributed to the introduction of thousands of tractors on Soviet state and collective farms. As yet only a small part of the gasoline produced in the country is consumed by the home market, but with the great development of the automobile and tractor industries planned for the next few years, there is no doubt that the internal market will play a very important part in this trade. For instance, it is esimated that by 1932-33 the consumption of gasoline by automobiles in the Soviet Union will increase 30 times.

"American oil producing and refining equipment has played a significant role in the development of the Soviet oil industry during the past few years. With the carrying into effect of the five-year plan for the development of the industry, which calls for doubling the production during the period and for a corresponding expansion in refining and drilling operations, it may be expected that American machinery and technique will assume even greater importance. Purchases for the Soviet oil industry last year constituted the largest group in the industrial purchases in this country, totaling close to $10,000,000. When it is considered that the total purchases in the industrial group last year were $30,000,000 and that the U. S. S. R. was the fourth largest purchaser of American industrial equipment in 1928—being exceeded in Europe only by England—the relation of the American oil equipment industry to the Soviet oil industry appears in its true significance. Among the leading American manufacturers who are supplying drilling and refining equipment to the Soviet Union are the Foster-Wheeler Corp., the Winkler Koch Co., the Graver Corp., the National Supply Co., the Emsco Derrick & Equipment Co., the Byron Jackson Pump Co., the Chicago Pneumatic Tool Co., the Worthington Pump & Machinery Corp., E. B. Badger & Sons, Max Miller & Co., etc. Some of these companies have extended long-term credits on purchases for the Soviet Union.

American Technique

"The American influence in the Soviet oil industry is reflected not only by the use of American machinery but also by the adoption to a great extent of American technique. Soviet oil engineers and industrialists visit this country frequently to study the methods in operation in American enterprises, and there is no doubt that these visits are an important factor in spreading American technique in the Soviet Union. In order to maintain close contact with the latest developments in the American fuel industries, a Fuel Technical Bureau has recently been established in connection with the Amtorg Trading Corp. The Oil Department is one of the divisions of this bureau, and through this department it is expected that the relations between the oil producers in the Soviet Union and oil men and equipment manufacturers in this country will be even closer than before.

"The industrialization program of the Soviet Union is proceeding at full blast. The results of the first year of the period covered in the five-year plan (1928-29 to 1932-33) exceeded the maximum expectations of the government authorities. The oil industry is playing a large part in this development. During the present year, the expansion of the industry is expected to continue unabated and an allotment of $140,000,000 has been provided for capital investments in the oil industry during the year. The expansion of cracking will be an especially important feature of this as well as of the next few years, the program calling for the construction of several score cracking plants during the next three or four years."

Prices and Volume

The rapid growth of the automobile industry in Europe has been instrumental in affording the Soviet oil syndicate an opening for heavier sales. The Bureau of Foreign and Domestic Commerce, in a

(Continued on Page 184)

Russia Starting Five Year Program

Has for Objective Production of 21,700,000 Tons of Crude and Material Expansion in Refinery Capacity

Russia is now witnessing the start of a five-year development program which has for its objective production of 21,700,000 tons of crude petroleum as well as material expansion of refinery capacity by the fiscal year 1932-33, according to an outline of the five-year economic plan of the U.S.S.R. by the State Planning Commission.

The Soviet plan for the development of the petroleum industry in Russia is based upon considerations of much more complicated character than the requirements of fuel supply, it is stated. At the inception of the five-year plan, 1928-29, Russia is producing 11,600,000 tons of petroleum annually, and the completion of the development plan is expected to see this total practically doubled.

This plan is touched upon in a current publication, "The Soviet Union Looks ahead," published by Horace Liverwright, which says, in part: "However, when the planned rate of growth of oil production is compared with the rate of growth in the other leading oil-producing countries, the attainments aimed at under the plan must be regarded as insufficient. New possibilities for further expansion of oil production must, therefore, be sought, through more extensive prospecting in new districts and more intensive new construction work. Along with this, another, and no less important, object of the petroleum development program is the more than doubling of the capacity of oil refineries—from 8,700,000 tons in 1927-28 to 19,100,000 tons in 1932-33. In addition, extensive use of cracking for the treatment of fuel will be introduced during the five-year period; it is planned to have 55 cracking plants installed in 1932-33. Finally, the plan provides, besides the completion of the pipe lines under way, for the construction of two additional pipe lines. In the event of favorable results of the prospecting work in the Emba Field, work will be started before the expiration of the period on the construction of a refinery in Samara and, probably, a pipe line from Emba to Samara (about 600 kilometers)."

Program Detailed

The realization of this expansion program is expected to bring about such a rate of growth in oil production and refining and such a relationship between them as will mean further substantial progress in the rationalization of this branch of Soviet industry. The expansion program is outlined in tabular form as follows:

	1927-28	1932-33	Ratio of 1932-33 to 1927-28
Production of crude oil (millions of tons):			
(a) Petroleum	11.3	20.8	184.1%
(b) Natural gas	.3	.9	300.0
Refining operations (millions of tons):			
(a) Crude petroleum	8.7	19.1	219.5
(b) Fuel oils	1.7	8.4	494.1
Consumed by oil industry and lost in refining (millions of tons):	1.8	3.3	183.3
Commercial output by main producing groups (millions of tons):			
(a) Motor fuels	1.8	6.1	338.9
(b) Refined products other than fuel oil	2.7	4.8	177.8
(c) Fuel oil	5.4	7.5	138.9
Total commercial output (millions of tons)	9.9	18.4	185.9
Value of commercial output (millions of rubles)	275.0	645.3	234.7
Average cost per ton (rubles)	27.8	35.1	126.3

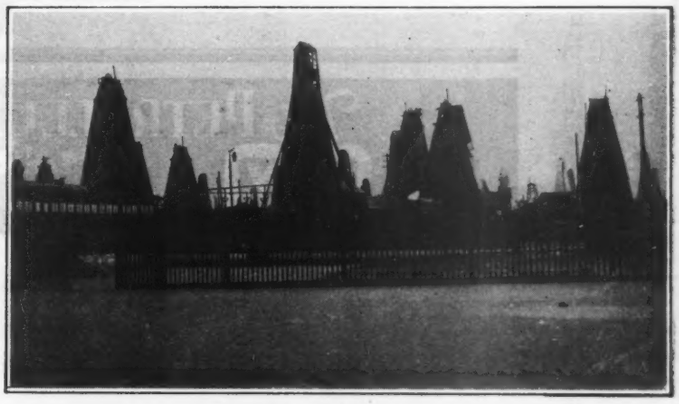
The total amount of capital which it is contemplated to invest in the Soviet petroleum industry during the five-year expansion program is reported at 1,400,000,000 rubles.

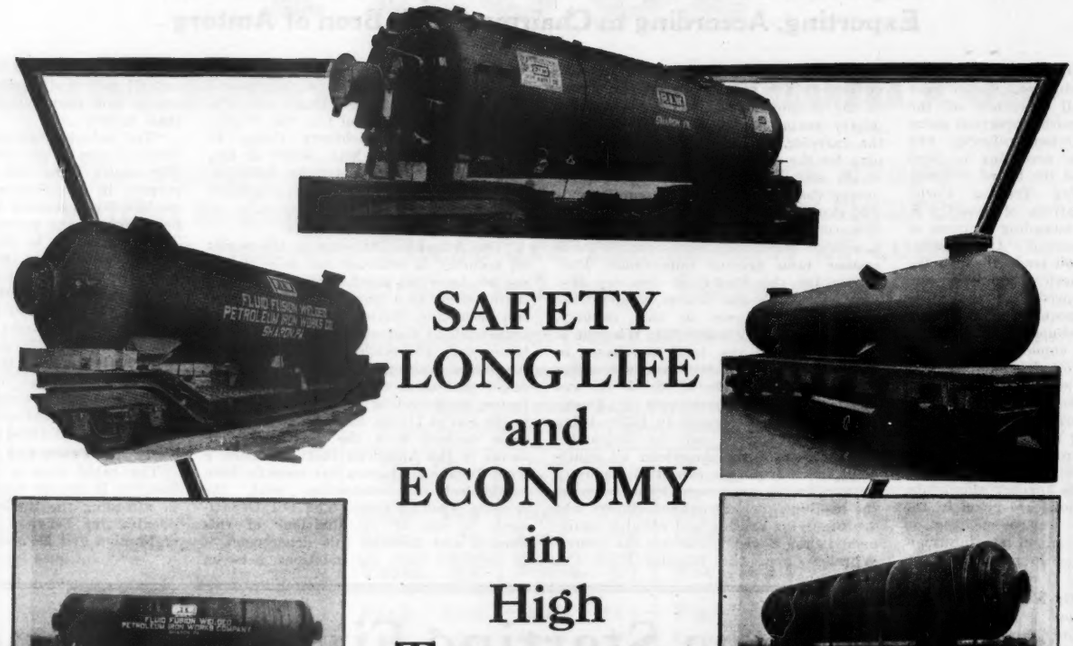
Extensive Wildcatting

The expansion plan indicates that extensive wildcatting will be continued during the duration of the campaign. The

(Continued on Page 168)

THE BALAKHANI FIELD, RUSSIA





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Gains in Automobile Registrations

Buses Attain a World Record with Largest Proportionate Increase. Trucks Rank Second in Growth. Export Development

Consistent gains in automobile registrations continued during the past year, with all classes of vehicles showing increases over 1928. The greatest gain in world registrations shown as of January 1, this year, was recorded in buses, world registration showing an increase of approximately 55 per cent over 1928. Trucks ranked second, with a gain of approximately 8 per cent, with passenger car registrations showing an increase of approximately 6.8 per cent. Registrations of all types of automobiles as of January 1, 1929, was up approximately 7.7 per cent over the total registrations at the start of the preceding year.

While definite data on the proportion of American made automobiles in the world registration total are not available, it is estimated that 90 per cent or more of the total of 32,028,584 automotive vehicles of all kinds registered throughout the world on January 1, 1929, were of American manufacture. This is important to the American oil industry, insuring as it does a growing world demand for fuels and lubricants of the same type made for domestic consumption. Another noteworthy feature, from the standpoint of the oil trade, is seen in the fact that registrations of buses and trucks, both large consumers of motor fuel and lubricants, led passenger cars in point of increase during the past year.

The United States continues to hold its overwhelming leadership in registrations of automobiles, trucks, and vehicles, accounting for all but 7,398,663 of the grand total of 32,028,584 motor vehicles registered throughout the entire world on January 1, this year. Other countries, previously backward in the development of their use of the automobile, are rapidly developing in this respect, however, and the outlook for a continued gain in world registration over the next decade is extremely favorable.

The growing use of buses in transportation abroad is a factor of great interest to the American oil trade. Bus transportation in England and on the Continent, as is the case in the United States, is becoming increasingly general, and the railroads are experiencing sharp competition in this connection.

Export movement of American passenger cars, trucks and buses was heavy during the first six months of 1929, but the total fell somewhat below that for the first six months last year, the high record for all time. Exports in the first half of 1929 were valued at $216,522,741, as contrasted with $259,934,682 in the comparable months of 1928. However, the export movement during the closing half last year fell off considerably, the total for the full year being but $361,981,423, so final figures for the closing half of 1929 may bring the year's total at least as high as the 1928 figures.

American oil companies have not lagged in following up growing use of American made automobiles in foreign countries, and considerable progress has been made during 1929 in the marketing of special lubricating oils for American made automobiles in use in foreign markets. The growth of export volume in branded package lubricating oils and greases has been one of the features of foreign marketing operations of American oil companies during the year.

Increase 20 Per Cent

World registration of all classes of gasoline driven automotive vehicles during the four-year period 1926-1929, has shown an increase in excess of 20 per cent, and authorities in the automobile industry are of the belief that the four-year period 1930-1933 will show a growth of close to that level. The outlook for new records in world petroleum consumption, therefore, appears most promising.

GROWTH OF WORLD AUTOMOTIVE REGISTRATION IN PAST FOUR YEARS

	Total World Registration January 1			
	Passenger cars	Buses	Trucks	Total automobiles
1926	20,837,146	172,617	3,463,856	24,473,619
1927	23,518,928	194,374	3,936,965	27,650,267
1928	25,168,940	204,382	4,314,177	29,687,499
1929	27,007,965	317,669	4,702,950	32,028,584

TOTAL WORLD AUTOMOTIVE REGISTRATION, JANUARY 1, 1928, AND 1929

	Passenger cars		Buses	Trucks	Total
Country—	1929	1928	1929	1929	1929
Aden	379	572	74	41	494
Afghanistan	518	100	...	...	518
Alaska	1,581	1,384	...	661	2,242
Albania	375	437	...	...	375
Algeria	33,000	25,750	880	5,200	39,030
Angola	958	800	...	1,157	2,115
Antigua	241	...	2	30	273
Argentina	259,120	224,803	2,200	49,485	310,805
Asir	14	20	6	...	20
Australia	418,173	346,885	2,152	96,370	516,695
Austria	16,760	14,118	12,114	...	28,874
Azores	680	640	28	14	722
Bahamas	837	728	7	304	1,148
Baluchistan	955	...	310	...	1,265
Barbados	1,189	1,046	125	172	1,486
Belgian Congo	2,264	1,900	1,950	...	4,214
Belgium	72,863	72,000	1,200	39,322	113,385
Bermuda	1	...	...	19	20
Bolivia	1,400	1,148	85	850	2,335
Borneo, North British	47	55	32	11	90
Brazil	109,000	95,000	1,200	55,500	165,200
British East Africa	8,085	6,522	...	4,415	12,500
British Honduras	147	148	...	45	192
British South Africa:					
Nyasaland	598	430	449	...	1,047
Rhodesia, North	768	...	...	333	1,101
Rhodesia, South	7,020	5,593	...	1,130	8,150
British Southwest Africa	1,366	1,052	2	546	1,914
British West Africa:					
Sierra Leone	363	256	8	292	663
Gambia	76	49	1	142	219
Nigeria	2,195	1,803	4	3,055	5,254
Gold Coast	1,604	987	14	5,110	6,728
Bulgaria	1,888	1,406	440	194	2,522
Canada	930,405	840,336	1,618	129,807	1,061,830
Canary Islands	3,783	3,354	274	1,460	5,517
Ceylon	12,659	10,410	2,314	2,338	17,311
Chile	19,610	14,900	1,670	4,160	25,440
China (except Hong Kong)	17,814	15,934	7,767	...	25,551
Chosen (Korea)	666	1,572	1,360	529	2,555
Colombia	14,000	6,420	...	...	14,000
Cook Islands	62	56	...	52	114
Costa Rico	1,115	950	172	364	1,651
Cuba	27,798	31,190	1,729	11,000	40,527
Cyprus	1,447	877	...	350	1,797
Czechoslovakia	33,070	28,370	1,460	12,570	47,100
Danzig	1,486	1,302	72	724	2,282
Denmark	76,500	66,000	1,100	21,000	98,600
Dominica	30	31	...	3	33
Dominican Republic	3,383	3,089	11	954	4,348
Ecuador	1,327	1,070	66	506	1,899
Egypt	20,933	18,342	1,193	2,871	24,997
Eritrea	139	97	11	28	208
Estonia	1,560	1,046	218	607	2,385
Ethiopia	402	67	...	46	448
Faroe Islands	15	...	2	22	39
Fiji Islands	755	683	41	165	961
Finland	22,903	17,405	1,486	8,769	33,158
France	740,000	656,000	13,000	345,000	1,098,000
French Equatorial Africa	200	82	380	...	580
French Indo-China	13,753	11,544	1,876	1,011	16,640
French West Africa	2,385	2,349	...	3,676	6,061
Germany	390,000	332,000	9,000	132,000	531,000
Gibraltar	451	515	42	89	582
Gilbert and Ellice Islands	...	...	2	...	2
Greece	11,350	9,300	2,050	3,850	17,250
Grenada	303	275	49	40	397
Guadelope	959	833	80	74	1,113
Guma	178	163	4	109	291
Guatemala	2,004	1,781	96	702	2,802
Guiana:					
British	1,600	1,521	...	260	1,860
Dutch	175	170	...	125	300
French	60	60	...	32	92
Haiti	1,978	1,491	213	434	2,725
Hawaii	33,635	30,293	223	7,524	41,382
Hejaz	800	90	200	100	1,100
Honduras	465	303	20	206	691
Hong Kong	1,600	1,294	477	...	2,077
Iceland	300	225	5	460	765
India	92,339	73,698	13,782	19,034	125,155
Iraq	3,528	2,477	...	610	3,138
Irish Free State	33,076	29,136	726	6,496	40,298
Italy	142,091	120,000	6,794	40,067	188,952
Jamaica	4,974	4,339	100	1,574	6,648
Japan	47,197	34,763	4,255	22,392	73,844
Latvia	1,356	1,226	179	709	2,244
Liberia	225	130	...	...	225
Lithuania	1,062	767	126	219	1,407
Luxemburg	5,775	3,805	65	2,000	7,840
Madagascar	1,584	1,000	88	384	2,056
Madeira Islands	370	300	130	75	575
Malaya, British	24,927	24,241	1,963	4,649	31,539
Maltese Islands	1,205	1,060	290	168	1,663
Martinique	1,340	1,383	15	245	1,600
Mauritius	2,850	2,422	80	435	3,365
Mexico	54,110	42,046	4,291	13,766	72,167
Mokalla	101	106	10	4	115
Monaco	1,419	1,155	56	91	1,566
Montserrat	28	37	...	7	35
Morocco:					
French	12,968	9,828	4,841	...	17,809
International Zone	572	270	20	313	905
Spanish	847	555	...	644	1,491
Netherlands	57,000	46,977	3,400	29,000	89,400
Hungary	11,997	9,256	505	3,860	16,362
Netherlands East Indies	57,000	20,294	5,200	10,000	72,200
Netherlands West Indies	954	...	8	606	1,568
Newfoundland	1,774	1,455	11	247	2,032
New Hebrides	...	...	...	25	25
New Zealand	125,690	111,385	1,190	24,574	151,454
Nicaragua	650	437	2	90	742
Norway	22,374	19,900	1,587	13,126	37,087
Palestine	2,135	1,416	475	709	3,319
Panama and Canal Zone	5,815	3,988	413	299	6,527
Papua	62	42	...	108	170
Paraguay	604	553	182	714	1,500
Persia	3,862	4,800	70	1,149	5,081
Peru	7,250	6,200	475	4,550	12,275
Philippines	19,791	20,547	2,850	6,702	29,343
Poland	21,686	16,772	2,841	4,896	29,423
Porto Rico	10,162	10,489	415	2,736	13,313
Portugal	21,066	18,609	240	3,830	25,136
Portuguese East Africa	1,258	...	12	1,008	2,278
Reunion	768	665	7	132	907
Rumania	21,186	15,039	1,394	6,499	29,079
Russia	8,759	8,168	2,248	10,051	21,058
St. Chirstopher Nevis	183	195	9	23	215
St. Lucia	120	96	7	25	152
St. Pierre and Miquelon	41	17	...	29	70
Salvador	1,535	1,365	110	236	1,881
Samoa, America	18	20	6	20	44
Samoa, Western	177	156	37	75	289
Seychelle Islands	14	14	...	...	14
Siam	4,000	3,707	1,150	1,700	6,850
Society Islands (ex. Tahiti)	16	15	...	7	23
Solomon Islands	2	2	...	5	7
Somaliland:					
British	24	23	7	23	54
French	104	93	10	18	132
Italian	243	45	...	203	446
Spain	112,452	134,050	33,636	...	146,008
Spitzbergen	1	...	...	...	1
Sudan (Anglo-Egyptian)	836	1,472	...	1,258	2,096
Sweden	94,301	81,465	2,192	31,167	127,660
Switzerland	53,768	43,450	600	11,239	65,607
Syria	4,822	4,828	166	561	5,549
Tahiti	294	200	11	56	361
Tonga	104	129	2	64	170
Trinidad and Tobago	4,245	3,245	261	1,074	5,580
Tripolitania	372	...	321	...	693
Tunisia	7,175	4,800	105	705	7,985
Turkey	6,700	5,500	2,300	...	9,000
Union of South Africa	114,000	93,000	850	11,000	125,850
United Kingdom:					
England and Wales	857,800	769,000	41,000	286,000	1,184,800
North Ireland	17,242	15,883	790	5,637	23,669
Scotland	77,000	71,000	5,000	27,700	109,700
United States	21,423,597	20,279,661	92,325	3,113,999	24,629,921
Uruguay	32,400	28,100	750	7,270	40,420
Venezuela	10,800	9,500	550	4,000	15,350
Virgin Islands	447	393	4	108	559
Yemen	15	22	20	...	35
Yugoslavia	9,800	8,866	450	2,000	12,250
Foreign countries and non-contigious countries: Total	5,584,368	4,889,080	225,344	1,588,951	7,398,663
Grand total	27,007,965	25,168,741	317,669	4,702,950	32,028,584

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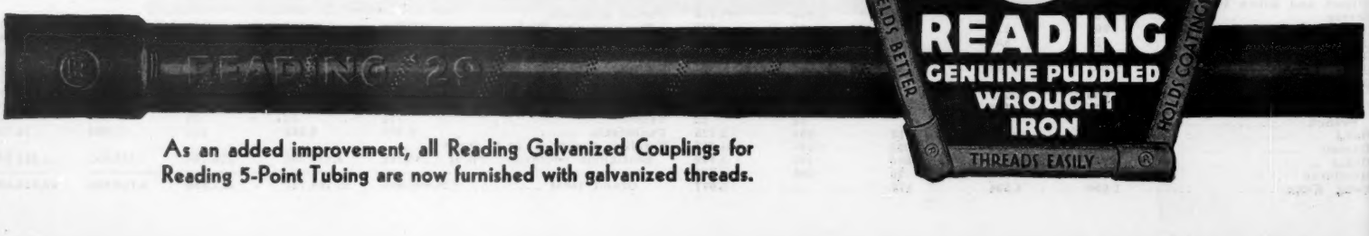

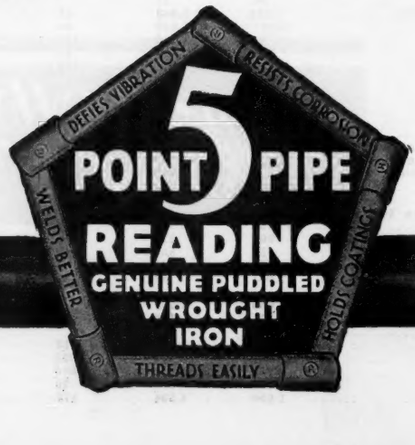

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Aeronautical Developments Abroad 1929

United States Leads in Civil Aircraft and Miles Flown, Germany in Lines in Operation, and Passengers Carried

By John H. Nelson

Before attempting to discuss aeronautical developments abroad in 1929, a glance at Tables A and B will give, statistically, the relative positions of various countries with respect to civil air transportation, the field of potential and immediate interest to the petroleum industry.

Next to the United States, with a total of 6,320 civil aircraft, follows Italy with 1,000, France with 860, Germany with 535, Great Britain with 353, and Canada with 327.

In miles of air lines in operation, Germany leads the world with 18,540, followed by the United States with 16,667, France with 11,542 (1927 figures last available), Russia with some 7,022 (1927), and Italy with 5,150 .

Germany also ranked first in the number of passengers carried in regular services in 1928 with 115,000, Canada following with 74,689, United States with 49,713, Australia with 23,896 (first six months only), and France with 21,000.

The United States led in the number of miles flown in regular services in 1928 with 10,673,450, followed by Germany with 7,030,565, France with 3,753,133, Canada with 2,724,414, and Italy with 1,236,913.

The United States also led in mail carried in 1928 with 4,061,210 pounds, France following with 1,607,280 pounds and Germany with 1,130,000 pounds.

In baggage and other goods carried by regular services in 1928, Germany ranked first with 4,282,000 pounds, France second with 2,755,000 pounds, Canada third with 2,404,682 pounds and the United States fourth with 1,847,836 pounds.

An increase of more than 100 per cent in the number of licensed and identified aircraft by the United States on June 30, 1929, over June 30, 1928, is claimed by the Department of Commerce.

There were 7,431 licensed and identified planes in operation at the end of the first half of the present year, compared to 3,156 operating at the same time last year, or a gain of 4,275 planes.

Technical Development

A close study of the technical developments of the year discloses few of direct interest to the oil industry.

In the United States, the substitution of ethylene glycol as a cooling medium in the place of water gives a marked decrease in wind resistance and motor operating temperatures 125° to 150° higher than is possible with water. In high compression aeronautical motors this increased temperature in turn calls for a considerable "doping" of the fuel to prevent predetonation. A corresponding cooling of lubricating oils to prevent lubricating difficulties calls for little change in motor oil characteristics. Incidentally, the Standard Oil Co. of New Jersey controls the utilization of a number of German patented processes for the production of ethylene glycol in the United States.

In Great Britain the British Air Ministry has recently been conducting tests on aviation gasoline obtained from British coal by the low temperature "oil from coal" process, and for the past several weeks both medium and high-power airplane engines have been running on this fuel at the Stag Lane Aerodrome near London. The chief objection to this gasoline as used thus far appears to be its exceedingly unpleasant odor, but it is thought this may be remedied by additional scrubbing.

It is claimed by Low Temperature Carbonization (Ltd.) that the company has produced since July, 1927, 1,850,000 imperial gallons of crude oil and about 160,000 gallons of gasoline, the latter having been disposed of to petroleum companies.

Automatic Pilot

An automatic airplane pilot has been patented in Germany, along the lines of the robot known as "Iron Mike" now widely used on steamers. It stabilizes an airplane automatically on the lateral, the longitudinal and the vertical axes. It is intended to relieve the strain on the pilot's nerves and body during flight and leave him free for navigation.

The weight of this gyroscope is 100 kilograms but the inventors are attempting to reduce its weight to 50 kilograms in order that it will not detract too much from the useful load capacity of the plane. Several similar inventions have recently come to notice in the United States.

One of the most interesting trends in Europe has been that of developing extremely large sized planes and flying boats.

The recent flights of the Dornier 12-motored boat with a carrying capacity of approximately 100 passengers are typical.

As has been noted in the appended tables, remarkable progress has been universal in number of miles flown and air mail carrying, but passenger, baggage and air freight carrying has lagged.

The developer of the above boat gives some interesting figures in this connection which explain the objective behind its development. Doctor Dornier claims that this boat offers the best prospect of profit if employed on stretches between 1,000 and 1,500 kilometers (600 and 900 miles). Doctor Dornier calculates the running costs, inclusive of everything save capital outlay, at two marks (78 cents) per ton-kilometer on a 1,000-kilometer run, with a yearly aggregate of 75,000 kilometers (45,000 miles).

For an example of possible profitable routes, he cited that it could carry about 12½ tons (2,205 pounds) of useful load on the 120-mile stretch between New York and Atlantic City, nine tons or 95 passengers on the 450-mile run between Marseilles and Algiers.

The Deutsch Lufthansa has recently been successful in transmitting pictures from the Berlin radio sending stations to air planes in flight. A weather chart, storm progress and airport photograph were transmitted. The practical and commercial application of this process will considerably broaden the usefulness of aerial mapping, reconnaissance and surveying.

"Romar" Flying Boat

In developing the "Romar" type of flying boat, the Rohrbach interests of Germany have attempted to produce a universal use flying boat, suitable for all purposes, with special attention to possibilities for transatlantic flying in commercially economic stages. The factors given chief consideration were: good flying qualities, great seaworthiness, high speed, large radius of action (up to 4,000 kilometers) and safety in operation. The factor of seaworthiness was especially stressed and the placing of the order was made dependent on a guarantee of seaworthiness in rough seas.

The test flights included on flight of 25 hours. In the couse of a test flight in August, one of the Romar flying boats covered a distance of approximately 2,600 kilometers in 16 hours, starting from the Lubeck airport and flying to England, Norway, Sweden and Denmark before returning to the starting point. The Romar took off from the water with a load of 18,000 kilograms in 125 seconds. It is proposed to put these boats in service between Europe and South America.

The Packard announcement of the successful operation of a Diesel type air-cooled radial airplane motor occurring at the same time that considerable publicity was given to the Graf Zeppelin's Blau gas motors, and the intention of the recently completed British dirigible R-101 to utilize crude (fuel) oil instead of either gasoline or gas have stimulated considerable discussion of possible new trends in aviation fuels but serious study shows that the petroleum industry has little to fear in competition along these lines.

Diesel Research

In France after years of experimental work on a Diesel type of airplane engine, involving one which would burn crude oil, announcement has been made

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TABLE A

Statistics of civil air transportation: Miles of air lines in operation, A; total number of civil aircraft, B; number of aircraft employed in regular services, C.

	A	B	C
1928—Australia	3,605	120	34
1928—Austria	[1]1,137	30	9
1928—Belgium	370	14	10
1928—Belgian Congo	2,195	....	33
1928—Bolivia	2,130	8	8
1928—Canada	1,654	327	....
1928—Colombia	1,774	17	15
1928—Czechoslovakia	[2]1,379	141	31
1928—Denmark	181	....	4
1928—Finland	[3]286	9	5
1927—France	[4]11,542	[5]860	241
1928—Germany	[6]18,540	535	190
1927—Great Britain	[7]2,322	353	15
1927—Hungary	[8]373	....	8
1928—Italy	[9]5,150	[2]1,000	54
1928—Japan	1,328	108	26
1928—Mexico	1,518	38	19
1928—Netherlands	2,092	30	21
1927—Persia	1,095	....	7
1928—Peru	2,350	18	10
1928—Poland	1,231	24	20
1927—Russia	7,022	....	....
1928—Spain	730	....	6
1928—Sweden	[11]711	....	8
1928—Switzerland	[12]2,105	43	19
1928—United States	16,667	6,320	6,320

[1]627 miles in co-operation with other companies. [2]Probably a running registry. [3]843 miles in co-operation with other companies. [4]All miles in co-operation with other companies. [5]600 miles in co-operation with other companies. [6]Estimates. [7]3,029 miles in co-operation with other companies. [8]223 miles in co-operation with other companies. [9]174 miles in co-operation with other companies. [10]317 miles in co-operation with other companies. [11]All miles in co-operation with other companies. [12]1,550 miles in co-operation with other companies.

EXPORTS OF AIRPLANES FACTOR IN WORLD CONSUMPTION OF OIL

Exports of airplanes from the United States, an important factor in further developing world consumption of American oil products, are coming in for widespread interest in the oil trade, owing to the rapid strides which American manufacturers have made in developing sales abroad within the past few years. American refiners have assumed world leadership in the development of special fuels and lubricating oils for aircraft, and the growing use of airplanes throughout the world will naturally be reflected by a steadily increasing export demand for these products.

While commercial development of aviation is now an old story in the United States, Great Britain, France and Germany, many other countries are just starting the development of aviation. The rapid strides which the new industry has made in the United States has naturally focused the attention of these nations upon this country as a source of supply.

During the past year, exports of airplanes, airplane engines, and parts, from the United States attained a value of $3,664,723, an increase of 93.5 per cent over the exports of the same products in 1927. During the first nine months of 1929, exports of these products aggregated in value $7,109,635, exceeding the total for the entire year 1928 by $3,444,912. It is now estimated that total exports for the year will pass the $10,000,000 mark. Based on an estimate of $80,000,000 for the value of all aeronautical products manufactured in the United States during 1929, it is thus shown that export trade will account for 12½ per cent of the country's entire output. Last year's exports were equal to approximately 5 per cent of 1928 output.

Aeronautical Exports

Exports for the first nine months of the current year, and the full years 1928 and 1927, compare in value as follows:

	1929*	1928	1927
Airplanes, seaplanes and other aircraft	$4,353,436	$1,759,653	$848,569
Aircraft engines	1,127,090	664,826	484,375
Parts and accessories (except tires)	1,629,109	1,240,244	570,117
Total	$7,109,635	$3,664,723	$1,903,560

*First nine months.

American aircraft manufacturers have achieved this substantial growth in exports in the face of strong competition from abroad, and this achievement in-

(Continued on Page 184)

Something About Crude Oil in Alberta

Chief Geologist of Imperial Oil Suggests Medium Grade May Be Found. Various Theories Analyzed in Discussion

By T. A. Link
Chief Geologist, Imperial Oil, Ltd.*

The actual and possible oil fields of Alberta are found in two wholly different physiographic areas—the foothills and the plains. This physiographic difference is traceable back to the geological setting or history of this western country and gives rise to diverse conditions and methods in the geological exploratory work, the actual drilling for oil, and also the production methods. It is a well-known fact that the crude oil discovered to date in these two areas is placed on the extreme ends of the table of crude oil classification. Turner Valley produces a very light colored crude naphtha of high Baume, while from the Skiff wells and the Wainwright area is recovered heavy crude oil near the bottom of the Baume table of classification. At the present time there is great speculation regarding the possible source or location of a crude oil lying between these two extremes, and not only fortunate, but also somewhat a hero, will be the operator who discovers it in commercial quantities.

There are numerous theories regarding the whereabouts of such a crude. Some think that deeper drilling in the Foothills belt will disclose it; other think that flank wells on Foothills structures should lead to its discovery; others are hoping to find it in the higher formations of the plains while still others look to the deeper lying Palaeozoic beds of the Plains area. These are not all the views, but they represent the most prevalent ones held in the circle of oil operators of Alberta. They are all more or less based upon sound reasoning as well as past experience gained from other oil fields of the world.

Oil, like bodies of ore, may exist in a given area, but cannot be profitably exploited on account of unfavorable geographic position, low grade, excessive depth, detrimental foreign impurities, etc All such factors must be taken into consideration before exploration is undertaken with the drill, and some of them are, in many cases, most certainly known beforehand.

Geological Setting

Before taking up this question of a modern grade crude oil it is in place to summarize the geological setting in the plains and the foothills.

The Madison limestone underlies a greater part of the prairies as well as the foothills. Above this we recognize the Fernie shales as the equivalent of the Ellis, the Kootenay sandstones, various colored shales and coal seams lie above the Fernie, and above the former is recognized the Dakota or Blairmore sandstones and shales. The Benton or Colorado shales are recognized in the plains as well as the foothills and above them is a thick series of sandstones and shales with thin carbonaceous and coaly members, the Belly River series, etc. This is the end of similarity.

A prospect beginning in the basal Belly River series, in the Foothills belt, has very little chance of reaching the Madison limestone at a depth less than 7,000 feet, while a hole beginning in that same horizon out in the prairies usually eucounters the top of the lime around 2,800 feet. The actual thicknesses of the beds at these two locations are essentially the same, but the drilling thicknesses are not. This is in the foothills belt which was caused by the extreme amount of compression to which they were subjected during the building of the Rocky Mountains. Eastward from the foothills in the plains the effect of these compressive forces was almost nil, so that the rock strata lie essentially flat in the prairies.

The location and detection of gentle structures in the prairies calls for a wholly different method of geological exploration. Exact elevations must be taken on easily recognized key beds. Structures in the plains are usually very gentle and cover considerable area, so that a location anywhere within a given quarter or even a whole section is accurate enough. In the foothills this is not the case. Locations must be "just right" or else failure will result. The trend of Turner Valley and the relative depths of the various holes on that structure brings this out very clearly.

With this general summary in mind let us now reconsider some of the most prevalent or popular views regarding the whereabouts of a medium grade crude oil in Alberta.

Theories Regarding Medium Grade Oil

(a) Deeper drilling in the foothills structures. Regarding the possibilities of striking a medium grade crude oil by drilling deeper into the formations below the Royalite's No. 4 zone, one can point out some significant facts. It has already been demonstrated in Turner Valley that the first light showings of oil encountered in the shallow lying Benton formation are the heavier, and as greater depths are reached in the underlying Dakota, Kootenay and Fernie, the gravity of the oil gradually becomes progressively higher and that finally, when the dolomitic zone of the Madison limestone is encountered, a very high gravity crude naphtha and wet gas is the product.

With this information available one would be tempted to predict that at greater depths a lighter naphtha and drier gas should be expected. However, the McLeod No. 4 well, which encountered a new horizon some 1,200 feet in the limestone (probably a bed in the Devonian) produces a naphtha of slightly lower gravity than in the upper horizon although the gas is drier. With these facts staring one in the face it becomes necessary to give an opinion regarding deeper drilling with due reservations and an open mind. My personal opinion is that deeper drilling is in order.

Drilling Flank Wells

(b) Drilling flank wells on the foothills structures. In nearly all oil and gas fields where sufficient drilling has been done, and where the anticlinal theory of migration and accumulation exists in its simpler form, it has been demonstrated that the dry gas is struck at the crest; the wet gas and light crude slightly down the dip from the crest; the heavier crude still further down the flank; and away down the dip from this one usually encounters salt water.

There is to date not sufficient information available regarding Turner Valley, but in general it has been demonstrated that the bigger wells which produce larger volumes of relatively drier gas, such as Royalite's No. 14 and McLeod's No. 4, are near the crests of the minor folds or fault blocks within the valley, while those wells which encounter the producing horizon down the flank, such as Foothills' No. 1 and Okalta's No. 1, produce more naphtha per cubic foot of gas—in other words, a very wet gas.

If this condition is general, and if one could drill a very deep hole away down the west flank of Turner Valley, it may be possible that a light crude oil would be encountered. Here again the drilling of an exceptionally deep hole (6,000 feet or more) into the producing zone of the dolomite would be in order.

Drilling on Plains

(c) Drilling prairie or plains structures to deeper Palaeozoic horizons. In Turner Valley the wells finished to date have passed through the Mesozoic sections of rocks and penetrated the upper Palaeozoics with very light crude oil or high grade naphtha the result. In the plains this same section has been penetrated in widely separated localities with only small amounts of heavy crude as the reward. The Kevin-Sunburst Field across the border, of course, the exception.

There are many who are advocating the drilling of very deep tests into the remaining Palaeozoic section of the rocks in the prairies. To date no such well has been drilled in Canada, but the results of several such tests in northern Montana have not been too encouraging. Whether or not these have any bearing on the ultimate results in Alberta, time alone will tell. I feel confident that some operators are going ahead sooner or later with sufficient optimism to make such tests.

Mountainward Structures

(d) The drilling of inner or mountainward structures. There are very few geologists who do not fear that in those structures which lie westward from the outer edge of the foothills belt, the metamorphism of the rocks has been so great that the chance for recovery of crude oil is very slight. In spite of this, however, one can count at least 10 derricks in Waite and Death Valleys and the west Highwood structure. In addition there is drilling going on in the Ghost River area, the Morley Reserve, etc. All of these locations are on what geologists term "inner folds."

The "carbon-ratio" theory is cited as only one of the arguments against such prospects. However, when one considers that at Oil City, inside the Rocky Mountains themselves, crude oil was encountered years ago, and is actually escaping through a surface seepage, one can not help but feel optimistic regarding these more westerly folds. The drill, of course, will settle this argument.

In connection with this, one might add here that, due to the fact that lower formations are outcropping in the cores of these inner structures, it would be possible to drill much deeper into the limestones, and also much shallower flank wells. This, however, is, in part offset by a gradual increase in thickness of the formations westward toward the mountains.

Border Foothills

(e) The drilling of eastern border foothills structures. There still remains one more important consideration to give this peculiar occurrence of light hydrocarbons in the foothills and heavy oils in the plains. This is the suggestion that, lying between these two belts, one might encounter a crude of medium gravity. To put it more clearly, "What about a fold or structure lying to the east of Turner Valley or any other outer Benton fold?"

The answer to this question is relatively simple. As already pointed out, it

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*Before joint convention of Oil and Gas Association of Alberta and Montana Chapter of Rocky Mountain Oil and Gas Association, at Calgary, Alberta. Mr. Link has been working in the Alberta fields for the Imperial company for the past 10 years, being chief geologist for the greater part of that time.

M'QUEEN, COSTE AND HOPKINS DISCUSS ALBERTA DEVELOPMENT

CHATHAM, Ontario, Dec. 20.—Oil development in Alberta, and particularly in the Turner Valley Field, was the subject of an address by Dr. O. B. Hopkins, geologist of Imperial Oil, Ltd., before the Troronto branch of the Canadian Institute of Mining and Metallurgy.

The Rocky Mountain area, with the foothills and the plains immediately east of these, Doctor Hopkins considered the least important on the basis of actual developments to date, but he believed the foothills area the most promising of this Rocky Mountain area in Canada. It was true that there were oil fields, such as the Sweetgrass Field in Montana, out to the east of the foothills, but the plains there were broken and more irregular than in Canada, with occasional hills or intrusions breaking up through the plains. It was around such an isolated mountain range that the Sweetgrass Field was located. The recent crude oil well—Vanalta Oils' No. 1—brought in on the southern boundary of Alberta was related to this field.

In Alberta, however, the foothills smoothed out into the plains, and the various strata flowed eastward in the most regular and symmetrical manner, offering very little opportunity for the synclines and anticlines usually associated with large pools of oil. Oil had been found at Viking, Wainwright and other places, but unfortunately so far it had been in most parts of the plains region of a heavy crude petroleum type and there had not been large quantities, due to the fine grain of the sands from which it was obtained.

By a geological map of the Turner Valley, Doctor Hopkins showed that most of the successful wells were drilled on or near a central portion of the Bentonite, along a strip about a mile wide and 16 miles long. Success had been achieved along about 11 miles southward from the foothills on the north. As production increased to the south it appeared likely that further drilling southward would be rewarded by success.

In answer to inquiries, Doctor Hopkins said that the limestone where most of the large production was drawn from in the valley was at varying depths owing to faulting and that accounted for wells having sometimes to go deeper than expected. Most of their studies of the region were made from the materials brought up in drilling. He had concluded from these that the limestone had been considerably eroded before the next layer had been formed upon it. The limestone he could not name, though it was probably the same as that in the surrounding mountains, and was probably the Madison. The productive area was generally from 100 to 300 feet into the limestone.

Faulting Important Factor

Eugene Coste, in discussing the address, spoke of the geology of the Turner Valley. He considered the faulting was the most important factor from the standpoint of oil and gas in trying to understand the structure. There was a great fault running down the central part of the valley, and the farther wells went to the east of this the less success they obtained. A parallel fault to the westward had the same relation and the farther wells went to the west of this fault the less success they had. He felt

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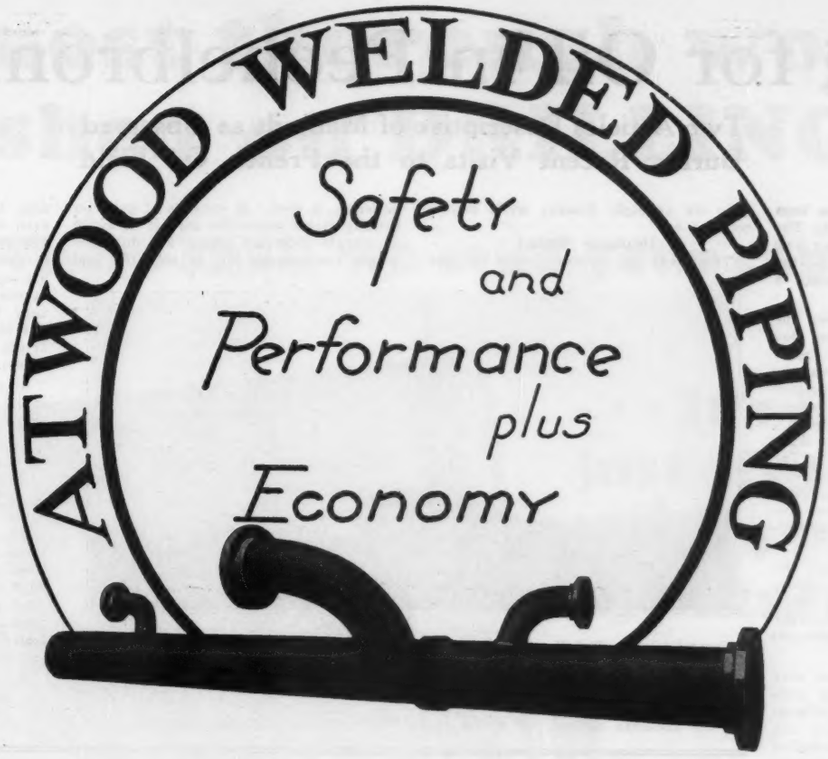

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Mining for Oil in Pechelbronn Area

Two Articles Descriptive of Methods as Observed During Recent Visits to the French Oil Field

Because of the interest that has been manifested in mining of oil sands The Oil and Gas Journal is publishing two articles covering a recent visit to the operations at Pechelbronn, France, in the Rhine Valley.

The first is a translation from the French prepared for The Oil and Gas Journal by Dr. Ed Bloesch, geologist, of Tulsa, and the second is from the Petroleum Times of London, and written by Mr. Forrester, (director of the Societe d'Explorations Minieres de Pechelbronn).

Already known in the Middle Ages under the name of "Bechelbrunn" (Tar Spring), the deposits of Pechelbronn were not worked methodically and without interruption until 1735. The production there is thus nearly two centuries old.

The Le Bel family coming from the south of France acquired the concession in 1768 and kept it until 1889, at which date the German company "Pechelbronner Oelbergwerke" bought it for 3,000,000 marks.

In 1906 the deposits were turned over for 17,000,000 marks to a German company "Vereinigte Pechelbronner Oelbergwerke" which worked them until the Armistice. At this time the concession was sequestered by the Grench government and turned over in January, 1921, to the French company which works it now under the name of "Pechelbronn, Societe anonyme d'Exploitations Minieres.

The concession of Pechelbronn which has an area of 44,000 hectares (17,807 acres) is in the northern part of the department of the Bas-Rhin, in the townships of Wissembourg et Haguenau. It has a length of about 30 to 40 Km. (18.64 to 24.85 miles) and its average width is 15 Km. (9.3 miles).

Study of Deposit

A study of the deposit shows that sands form the oil reservoir. The scattered petroliferous lenses have a varying length, width and thickness, and are enclosed in impervious clays.

The western limit of the concession coincides with a great fault which separates the last hills of the Vosges Mountains from the down-faulted Valley Rhine.

These oil sands contain crude oil, salt water and a certain quantity of gas in the deepest strata. In these latter the oil encountered is light oil, while the old workings at depths of 100 meters (328 feet) furnished heavy oils of very high density. The actual wells drilled to an average of 450 meters (1,476 feet) produce oil, the density of which does not exceed 0.9.

At Pechelbronn the crude oil is extracted by two different methods; by drilled wells and by drainage into shafts and galleries.

The drilling tools used are partly tools with water circulation and a rapid stroke. In these, the drillings are removed by a continuous stream of water circulated through the interior of the drilling pipe, coming out through holes at the bottom of the bit and emptying at the surface of the ground. The other method is by cable tools of the type well known and generally used in America.

Actually, Pechelbronn owns 52 strings of tools. The company drills over 50,000 meters (164,041 feet) a year and is in this respect one of the strongest drilling companies in Europe.

When the oil sand lens is reached, if the gas pressure is sufficient, the oil flows to the subsurface. If not, it has to be pumped.

The flowing wells are not very frequent at Pechelbronn. Among the 75 producing wells accomplished in one year, only six or eight flowing wells can be counted on.

Drainage Method

This weak gas pressure does not permit to completely exhaust the deposit by wells. In order to extract the remaining oil, the drainage method, oil shafts and galleries, is used. It consists of galleries usually driven above the deposit in which at certain intervals sumps are dug into which the seepage oil is collected and pumped to the surface by ordinary methods.

General view in Pechelbronn Field, France, showing drilling rig in place and older finished wells in background.

Pechelbronn has 630 pumping wells, also three separate mining operations, each worked through separate shafts and galleries. Each one has a shaft for air intake and one for the air outlet. They are equipped the same way as the ones in coal mines. The depth of the shafts vary from 150 to 230 meters (492 to 754 feet) and the length of the galleries driven at present is over 70 Km. (43.4 miles).

Since 1925, production of crude oil at Pechelbronn shows the following figures:

(Metric of 2,240 pounds each)

	Tons
1925	63,650
1926	62,347
1927	68,643
1928	71,725

The great importance of this particular production method is easily realized in a country like France, so poor in petroleum products. It permits to produce from a deposit already depleted, all the remaining oil which otherwise would be lost.

Refineries at Pechelbronn

Outside of the crude oil produced from the concession, the refineries of Pechel-

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German Development in Refining

Obtaining Greater Yields of Gasoline and Light Products. Further Study of the Hydrogenation Process

German development in refinery operations during the year has been largely in the direction of obtaining greater yields of gasoline and other light products, and in the further development of the hydrogenation process whereby light oils may be recovered from coal, as well as from a petroleum base. The feature of the year 1929 in this respect was the cementing of the relations between the Standard Oil Co. of New Jersey and I. G. Farbenindustrie, the German dye trust, in the development and commercial exploitation of the hydrogenation process, this accord reputedly involving the protection of marketing outlets for the German production of light oils. Increasing competition from Russian oil was an outstanding feature of the German oil market this year.

At last reports, there were 34 petroleum refineries operating in Germany. These refineries are centered around Hamburg and in western Germany around Cologne, Dusseldorf and Dortmund. Recovery of light oils from German crude production is negligible, with the larger percentage recovered from imported crudes.

Soviet Big Factor

The German oil situation has been somewhat camplicated this year by the entry on a large scale of the Soviet oil syndicate into the German market. Since 1923, the peak inflation year in Germany, the Soviet government has been systematically building up a considerable oil trade involving 2,500,000 bbls. of exports to Germany in the fiscal year 1927-28, while planting two distributing organizations—the Derunaphtha Co. for wholesaling and the Derop Co. for retailing, according to consular reports from Berlin. Russian competition during the first half of 1929 accounted for approximately 20 per cent of Germany's imports of petroleum and refined products, with the United States supplying between 55 and 60 per cent of the imports during that period.

The first postwar imports of Russian oil into Germany, in 1923, resulted from a contract between the then Berlin representation of the All-Russian Naphtha Syndicate with the German oil-importing firm of Ernst Schliemann G.m.b.H. of Hamburg, which signed a delivery agreement on about 315,000 bbls. annually of Russian kerosene and lubricating oils. It was then a monopoly contract, as the Russians had no sales organizations abroad and could thus spare costs of investments in their own direct agencies.

The second big contract was in 1924 with a German lubricating oil consortium, and involved annual delivery of 280,000 bbls. of Russian lubricants. In the same year the Russian syndicate contracted with two Berlin and Hamburg firms for an annual delivery of 280,000 bbls. of gasoline. This contract was cancelled after two years on account of a merger of the Deutsche Erdoel A. G. into Deutsche Petroleum A. G., whose distributing organization is under contract with the Anglo-Persian for oil. Anglo-Persian now controls 75 per cent of the capital stock of this distributing organization.

Keen Competition

In 1924 serious competition began in the German market between the Russian and other petroleum companies, notably

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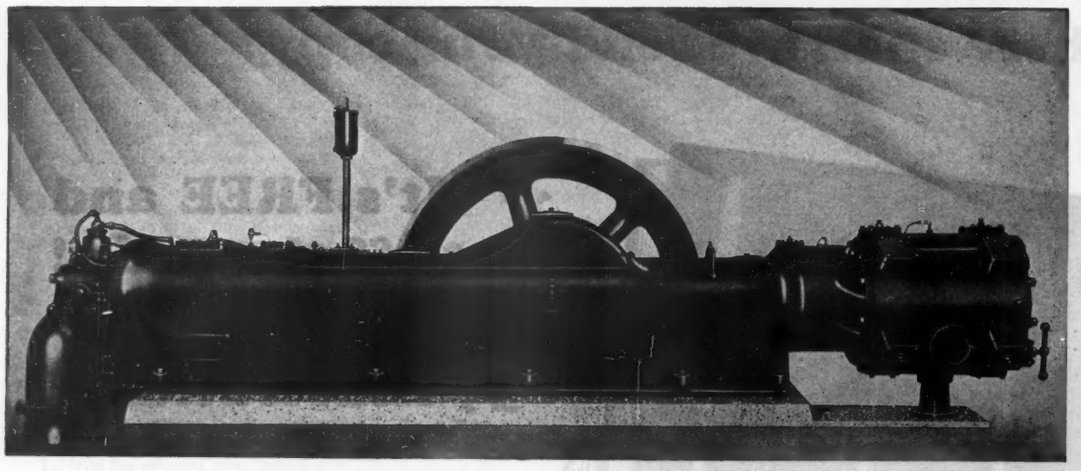
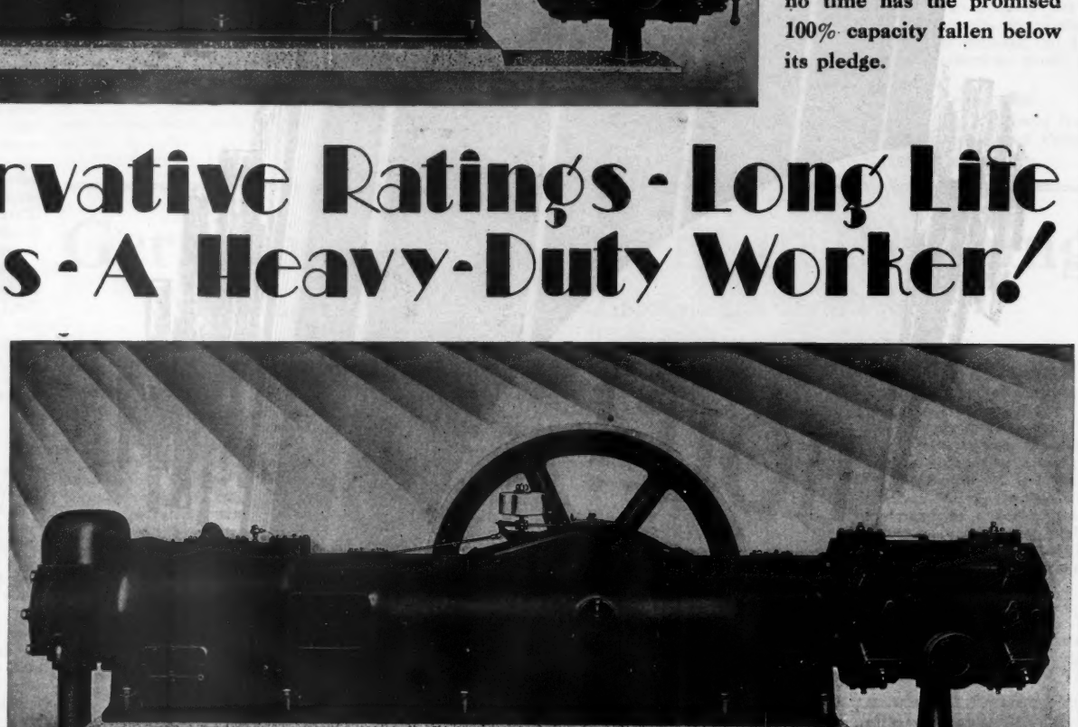


Watts-Miller gas engines and compressor units are conservatively rated as to their capacity. For thirty years users of Watts-Miller Gas Engine-Driven Air Compressor Units have received a *little more* on every order than was written in the contract. And at no time has the promised 100% capacity fallen below its pledge.

Conservative Ratings - Long Life Features - A Heavy-Duty Worker!

The Watts-Miller positive lubrication system—Watts-Miller dependable dual-plug ignition — speed control under all loads — fortified frames and rugged castings . . . these are features that mean long life with minimum replacement of parts, and astounding records of continuous operation.



Its year around endurance, its ample strength for heavy-duty work and its infallible ability to deliver more than expected capacity, (though conservatively rated), has made Watts-Miller the choice of those who want the best.

The Miller Improved Gas Engine Company,
Springfield, Ohio

MEXICO'S MAMMOTH OIL WELLS DWARF BIG WELLS IN U.S.A.

By James McIntyre

The Aguila Petroleum Co.'s No. 4 Potrero del Llano, in the field of that name in Mexico produced 94,923,999 bbls. up to September 1 of this year and was producing close to 800 bbls. per day on the date named.

This is the largest production of crude oil credited to any one well on the American continent. It is 10 times greater than the production of the largest well in the United States, the Union Oil Co.'s famous "Lake View gusher" in California and 46 times greater than the production of the Gypsy Oil Co.'s No. 6 Shumway in Butler County, Kansas, the largest well in initial or in total production in that State.

Next to the Aguila Petroleum Co.'s No. 4 Potrero del Llano in the list of big Mexican oil producers is the Huasteca Petroleum Co.'s famous No. 4 Cerro Azul in the Lower Cerro Azul Field which had produced 79,475,607 bbls. up to September 1. This well was producing about 2,700 bbls. a day, when the report closed.

The two Mexican wells above referred to have between them produced more oil than the Burbank or the Healdton Field in Oklahoma, which are two of that State's leading producing areas.

The six largest wells in Mexico produced 19,000,000 bbls. more than the entire Smackover Field in Arkansas up to September 1, including Smackover heavy and light oil. The three largest Mexican wells yielded a total of crude oil that dwarfs the production of the famous Glenn Pool in Oklahoma or the combined production of Mexia and Powell in Texas. The total output of the Salt Creek Pool in Wyoming up to September 1 of this year is less than the production of Mexico's three largest wells.

It would be useless to make any comparison between wells in the Greater Seminole area and the big wells in Mexico because the largest well in Mexico had produced more oil than the Earlsboro or Seminole City Pools, the largest of the Seminole group, and the two leading Mexican wells, combined, exceeded the production of the Earlsboro and Seminole City Pools, combined.

The seven largest wells in the South Field in Mexico produced more oil than the eight pools that make up the Seminole Field. The seven Mexican wells produced 323,022,046 bbls. and the eight Seminole pools produced 322,853,442 bbls. up to September 1.

Huasteca Leading Producer

The Huasteca Petroleum Co. is the leading producer in the southern fields with a record up to September 1 of 299,092,337 bbls. The first 10 companies made the following record of production:

Company—	Bbls.
Huasteca Pet. Co.	299,092,337
Aguila Pet. Co.	239,301,519
Mexican Gulf Oil Co.	77,137,374
International Pet. Co.	50,924,892
Penn Mex Fuel Co.	41,177,592
Agwi Cia del	39,200,721
Transcontinental	34,448,811
Metropolitan Oil Co.	25,701,800
The Texas Company	18,723,313
Corona Petroleum Co.	14,111,511

The total production of the Southern Field up to September 1 was 915,201,127 bbls. and on September 1 it was averaging 47,000 bbls. a day.

In the Northern Fields the Mexican Sinclair Oil Co.'s No. 3 Zuritz, in the Panuco district, produced 21,625,953 bbls. up to September 1. It was the largest well in that field, which had produced 632,182,789 bbls. up to September 1. The largest producing company in the field was the Corona Petroleum Co. The ten leading producers were:

Company—	Bbls.
Corona Petroleum Co	99,857,816
Transcontinental	94,700,471
Mexican Petroleum Co.	91,135,792
Mexican Sinclair Pet. Corp.	74,264,805
International Pet. Co.	39,892,631
East Coast Oil Co.	34,004,303
Mexican Gulf Oil Co.	33,829,956
Texas Co. of Mexico	25,439,983
New England Fuel Oil Co.	22,947,296
National Railways of Mexico	10,278,008

The Northern Fields were producing about 59,000 bbls. a day on September 1.

Mexico's Largest Wells

Following is a list of the wells in the Mexico fields that had produced 5,000,000 bbls. or more up to September 1, 1929:

Southern Field

Production of largest wells to September 1, 1929:

	Bbls.
Aguila Pet. Co. No. 4 Potrero del Llano	94,923,999
Huasteca Pet. Co. No. 4 Cerro Azul	79,475,607
Huasteca Pet. Co. No. 7 Lot 165 Chinampa	56,368,755
Penn Mex. Fuel Co. No. 2 Alamo	27,789,795
Aguila No. 9 Lot 260 Amatlan	25,205,156
Aguila No. 4 Lot 260 Amatlan	19,812,178
Mex. Gulf Oil Co. No. 3 Toteco	19,446,656
Huasteca Pet. Co. No. 7 Cerro Azul	19,162,344
Mex. Gulf Oil Co. No. 4 Toteco	14,978,866
Huasteca Pet. Co. No. 16 Cerro Azul	13,348,330
Agwi Cia. del No. 3 Lo. 251 Amatlan	13,330,378
Agwi Cia. del No. 2 Lot 251 Amatlan	12,357,940
Huasteca Pet. Co. No. 9 Cerro Azul	11,284,198
International Pet. Co. No. 1 Toteco	10,429,495
Internat. Pet. Co. No. 1 Lot 256 Amatlan	10,425,008
Aguila No. 19 Lot 132 Amatlan	10,093,655
Metropolitan Oil Co. No. 1 Lot 162 Chinampa	9,965,007
Aguila No. 1 Lo. 163 Chinampa	9,641,273
Huasteca Pet. Co. No. 8 Cerro Azul	9,428,985
Huasteca Pet. Co. No. 11 Cerro Azul	9,317,230
Penn Mex. Fuel Co. No. 7 Alamo	8,859,003
Mex. Gulf Oil Co. No. 4 Lot 251	7,945,981
Mex. Gulf Oil Co. No. 14 Lot 190 Amatlan	6,897,632
Aguila No. 10 Lot 113 Amatlan	6,894,610
Huasteca Pet. Co. No. 11 Tierra Blanca	6,864,382
Huasteca Pet. Co. No. 34 Cerro Azul	6,717,515
International Pet. Co. No. 3 Toteco	6,355,236
Texas Co. No. 4 Lot 153 Chinampa	6,333,883
Agwi Cia. del No. 1 Lo. 195 Chinampa	6,100,680
Transcontinental Pet. Co. No. 1 Lot 163 Chinampa	6,064,061
Aguila No. 4 Alazan	5,930,189
Cortez Oil Co. No. 5 Lot 5 Tepetate	5,893,972
Huasteca Pet. Co. No. 19A Tierra Blanca	5,727,092
Aguila No. 5 Lot 111 Amatlan	5,650,421
Huasteca Pet. Co. No. 3 Cerro Azul	5,587,390
Mexican Sinclair Pet. Corp. No. 3 Lot 251 Amatlan	5,397,092
Texas Co. No. 1 Lot 114 Chinampa	5,342,305
Huasteca Pet. Co. No. 6 Chapopote Nunez	5,301,563
International Pet. Co. No. 4 Toteco	5,005,430

Northern Field

Production of largest wells to September 1, 1929:

	Bbls.
Mexican-Sinclair No. 3 Zuritz	21,625,953
Corona Pet. Co. No. 5 San Manuel	11,228,842
Corona No. 4 Lot 4	10,544,179
Transcontinental No. 5 Ojital	9,147,871
Mexican-Sinclair No. 3 Gonzales	8,686,079
Transcontinental No. 16 Lot 4	7,768,681
Corona Co. No. 12 Salvasuchi	7,457,571
Transcontinental No. 9 Lot 4	6,508,322
Transcontinental No. 2 Barberina	6,397,445
Corona No. 104, Lot 1	5,571,375
Corona No. 12, Lot 4	5,315,936
Corona No. 75 Lo. 4	7,177,487
New England Oil Co.'s No. 3 Cruz Salvasuchi	5,134,340
Mexican-Gulf No. 1 Lopez San Jose	5,095,314
Corona Co. No. 38 Potrero Ojital	5,000,000

WORLD PRICES SHOWN ON GASOLINE AND KEROSENE

(Continued from Page 141

Country and city—	Jan. 1	Apr. 1	July 1	Oct. 1
Strasbourg	..	..	34	34
French West I'd's:				
Martinique	41	41	..	..
Germany:				
Berlin	..	..	24	..
Hamburg	..	..	20	..
Breslau	..	..	30	28
Cologne	..	..	27	..
Leipzig	..	..	32	..
Greece:				
Athens*	48	48	59	50
Guatemala:				
Guatemala	..	..	54	48
Gold Coast:				
Accra*	..	..	50	..
Haiti:				
Port au Prince	33	33	..	..
Hungary:				
Budapest	23	23	21	..
Honduras:				
Tegucigalpa	33	33	..	..
India:				
Calcutta*	19-23	19-23	19-23	25
Irak:				
Baghdad	25	25	15-33	32
Irish Free State:				
Dublin	26	23	32	32
Italy:				
Rome	..	..	44	..
Jamaica:				
Kingston	41	41	..	..
Japan:				
Tokyo	26	26	22	..
Latvia:				
Riga	..	16	16	16
Lithuania:				
Kovno	..	20	20	19
Luxemburg:				
Luxemburg	..	..	..	24
Liberia:				
Monrovia*	40-48	40	..	..
Mexico:				
Mexico City	..	..	26	..
Guadalajara	..	..	30	30
Vera Cruz	..	..	..	27
Mazatlan	..	..	..	23
Morocco, Spanish:				
Tangier	24	24	33	..
Netherlands:				
The Hague	21	21	21	21
Netherland E. I.:				
Batavia	..	..	28	..
Netherland W. I.:				
Curacao	22	22	..	14-28
Newfoundland:				
St. Johns*	30	30	30	..
New Zealand:				
Wellington*	..	..	36-41	..
Nicaragua:				
Bluefields	39	39	39-50	40
Norway:				
Oslo	21	21	24	21
Panama:				
Panama City	29	29	29	29
Peru:				
Lima	24	24	26	26
Philippine Islands:				
Manila	27	27	27	27
Poland:				
Warsaw	27	27	27	27
Porto Rico:				
San Juan	25	25	25	26
Portuguese E. A.:				
Lourenco Marques	40	40	..	..
Rumania:				
Bucharest	11	12	12	12
Salvador:				
San Salvador	..	..	42	42
Society Islands:				
Tahiia	35	35	35	36
Spain:				
Madrid	33	33	35	35
Sweden:				
Stockholm	..	..	25-30	30
Switzerland:				
Zurich	29	29	29	29
Syria:				
Beirut	18-27	18-27	..	29
Turkey:				
Constantinople	33	36	36	33
Union of S. Africa:				
Johannesburg	41-43	..	41-43	41-45
Durban	31-34	..	31-34	31-34
Cape Town	31-34	..	31-34	31-34
United Kingdom:				
London*	22-30	22-30	22-30	22-30
Scotland*	22-30	22-30	22-30	22-30
Venezuela:				
Caracas	..	..	51	..
Yugoslavia:				
Belgrade	50	50	50-55	57

*Imperial gallon.
†Wholesale prices.

Fuel Oil Prices

The table of fuel oil prices is taken from an English source (Compendium of Commerce, London), which apparently uses Anglo-American synonymously for not only the Standard Oil Co. of New Jersey but all other Standard companies and affiliations. Quarterly prices on fuel oil are not given, since, as is well known most of this business is long term contract and little or no changes are quoted from quarter to quarter.

PRICES FUEL OIL WORLD PORTS
(as of October 1, 1929)

Port and company—	Heavy £ s. d.	Light £ s. d.
Abadan:		
Anglo-Persian	3/—/—	3/—/—
Adelaide:		
Asiatic	3/17/ 6	4/ 2/ 6
Aden:		
Anglo-Persian	3/12/ 6	3/17/ 6
Asiatic	($)	($)
Alexandria:		
Anglo-American	.....	.....
Asiatic	3/12/ 6	.....
Anglo-Persian	3/12/ 6	.....
Algiers:		
Anglo-Persian	3/12/ 6	4/ 7/ 6
Amsterdam:		
Anglo-American	.....	$16.00
Asiatic	*Fl. 41	*Fl. 50
Antofogasta:		
Anglo-American	.....	.....
Anglo-Mexican	‡$2.00	.....
Asiatic	‡$2.00	.....
Antwerp:		
Anglo-Persian	*3/ 7/ 6	*4/ 2/ 6
Asiatic	.....	4/ 7/ 6
Anglo-American	.....	$16.00
Astoria:		
Anglo-American	$1.10	$1.61
Balboa:		
Anglo-American	‡$1.25	‡$1.80
Balboa (Panama Canal):		
Asiatic	‡$1.25	‡$1.80
Balik Pappan:		
Asiatic	3/—/—	3/—/—
Baltimore:		
Anglo-American	$1.05	$2.00
Bangkok:		
Asiatic	3/10/—	3/15/—
Batavia:		
Asiatic	3/10/—	3/15/—
Baton Rouge:		
Anglo-American	$0.90	$1.50
Bayonne, N. J.:		
Anglo-American	$1.35	$2.00
Baytown:		
Anglo-American	$0.95	$1.50
Bergen:		
Anglo-Persian	.....	.....
Asiatic	.....	kr. 90
Bermuda:		
Anglo-American	*$2.00	.....
Bizerta:		
Anglo-American	$13.00	$16.00
Bombay:		
Asiatic	3/15/—	4/—/—
Anglo-Persian	3/15/—	4/—/—
Bordeaux:		
Anglo-Persian	($)	($)
Asiatic	3/12/ 6	4/10/—
Brisbane:		
Asiatic	3/17/ 6	4/ 2/ 6
Buenos Aires:		
Anglo-American	3/ 2/—	.....
Asiatic	3/—/—	($)
Calcutta:		
Anglo-American	.....	.....
Asiatic	3/15—/	4/—/—
Anglo-Persian	3/15/—	4/—/—
Campana:		
Anglo-American	*3/ 2/—	.....
Cape Town:		
Anglo-American	.....	.....
Anglo-Persian	4/ 2/ 6	4/15/—
Asiatic	4/ 2/ 6	4/15/—
Cebu:		
Asiatic	3/10/—	3/15/—
Ceuta:		
Ybarrola Depositos de Aceite Combustible, S.A.	3/12/ 6	.....
Charleston:		
Anglo-American	$1.00	$2.00
Colombo:		
Anglo-American	.....	.....
Asiatic	3/15/—	4/—/—
Anglo-Persian	3/15/—	4/—/—
Colon (Panama Canal):		
Asiatic	‡$1.25	.....

FIRELESS LOCOMOTIVES, LLANDARCY REFINERY

70 Birthday years

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Get your Heavy Loads on time—Haul with ATHEYS

You men who are faced with the responsibility of hauling heavy equipment economically and ON TIME—compare your present hauling equipment with these Athey advantages:

With Atheys, the same tractive power hauls twice as much. This cuts your trips in two and saves half the time.

Bad roads can't stop Atheys. They'll carry capacity loads wherever tractors or animals can operate.

Atheys are easier on the tractors. Maintenance costs are reduced by Athey's light running qualities.

Their all steel construction and adaptability to all kinds of loads gives them long life and daily usage.

You'll be surprised how the many practical advantages of Athey Truss Wheel Wagons will cut your hauling costs. Write—and we'll tell you.

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130 N. Wells St., Chicago, Ill.

Cable Address: "Trusswheel", Chicago
The Baldwin Locomotive Works, Foreign Representatives, Philadelphia, Pa.

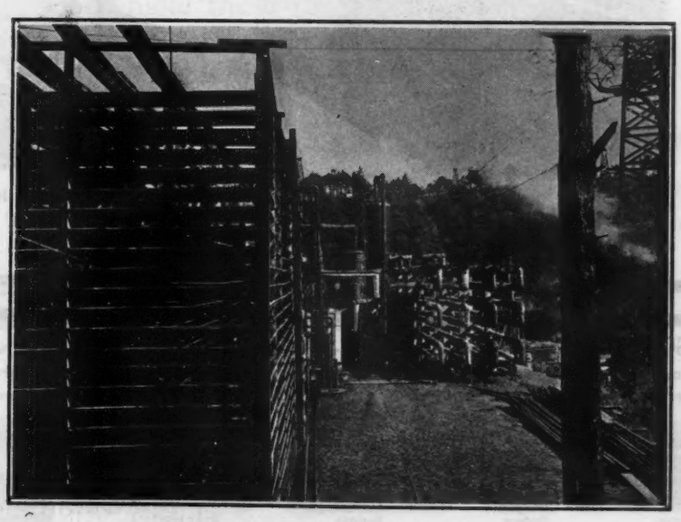
Port and company—	Heavy £ s. d.	Light £ s. d.
Constantinople:		
Anglo-American	$13.00	$15.00
Constanza:		
Asiatic	($)	($)
Copenhagen:		
Anglo-American	.....	.....
Anglo-Persian	*3/ 7/ 6	*4/ 2/ 6
Cristobal:		
Anglo-American	‡$1.25	.....
Curacao:		
Anglo-American	$1.05	($)
Asiatic	‡$1.00	‡$1.80
Donges:		
Anglo-Persian	*3/12/ 6	*4/10/—
Dunkirk:		
Anglo-American	.....	.....
Anglo-Persian	*3/12/ 6	*4/10/—
Durban:		
Anglo-Persian	4/—/—	4/12/ 6
Fremantle (W.A.):		
Anglo-Persian	3/17/ 6	4/ 2/ 6
Genoa:		
Anglo-American	$13.00	$16.00
Asiatic	*3/12/ 6	*4/10/—
Gibraltar:		
Asiatic	3/12/ 6	4/ 7/ 6
Gothenburg:		
Asiatic	.....	*kr. 75
Halifax:		
Anglo-American	‡$1.20	.....
Hamburg:		
Anglo-American	$14.00	.....
Anglo-Persian	*3/ 7/ 6	*4/ 2/ 6
Asiatic	3/ 7/ 6	4/ 2/ 6
Hankow:		
Asiatic	3/15/—	4/—/—
Havana:		
Asiatic	‡$1.60	.....
Anglo-Mexican	$1.60	.....
Havre:		
Anglo-Persian	3/12/ 6	*4/10/—
Asiatic	3/12/ 6	.....
Helsingfors		
Anglo-American	.....	.....
Hongkong:		
Anglo-American	$17.00	$18.25
Asiatic	3/10/—	3/15/—
Honolulu:		
Anglo-American	‡$1.14	‡$1.66
Asiatic	‡$1.15	‡$1.45
Ichang:		
Asiatic	4/10/—	4/15/—
Iloilo:		
Asiatic	3/10/—	3/15/—
Iquique:		
Anglo-Mexican	$2.00	.....
Asiatic	‡$2.00	.....
Itosaki:		
Anglo-American	4/ 5/—	.....
Juneau:		
Anglo-American	.....	‡$1.75
Karachi:		
Anglo-American	.....	.....
Asiatic	3/15/—	4/—/—
Anglo-Persian	3/15/—	4/—/—
Ketchikan:		
Anglo-American	‡$1.40	‡$2.24
Kobe:		
Asiatic	3/10/—	3/15/—
Las Palmas:		
Asiatic	3/ 3/ 6	3/18/ 6
Leghorn:		
Asiatic	*3/12/ 6	*4/10/—
Anglo-American	$13.00	$16.00
Levis:		
Anglo-American	.....	.....
Lisbon:		
Asiatic	3/12/ 6	($)
Macassar:		
Asiatic	3/10/—	3/15/—
Madras:		
Asiatic	3/15/—	4/—/—
Anglo-Persian	3/15/—	4/—/—
Malta:		
Asiatic	3/12/ 6	.....
Manila:		
Asiatic	3/15/—	4/—/—
Marseilles:		
Anglo-American	3/12/ 6	4/10/—
Asiatic	*3/12/ 6	*4/10/—
Anglo-Persian	*3/12/ 6	*4/10/—
Melbourne:		
Anglo-American	.....	.....
Asiatic	3/17/ 6	4/ 2/ 6
Anglo-Persian	3/17/ 6	4/ 2/ 6
Miri:		
Asiatic	3/—/—	3/—/—
Mombasa:		
Asiatic	4/—/—	4/ 5/—
Anglo-Persian	4/—/—	4/ 5/—
Montevideo:		
Anglo-American	.....	.....
Anglo-Mexican	*3/ 2/ 6	.....
Asiatic	*3/ 2/ 6	.....
Montreal:		
Anglo-American	$1.45	.....
Asiatic	‡$1.45	($)
Nagasaki:		
Anglo-American	$17.00	$18.25
Asiatic	3/10/—	3/15/—
Naples:		
Asiatic	*3/12/ 6	*4/10/—
New Orleans:		
Anglo-American	$0.95	$1.85
Asiatic	‡$0.95	‡$1.85
New York:		
Anglo-American	$1.05	$2.00
Anglo-Mexican	$1.05	$2.00
Asiatic	‡$1.05	‡$2.00
Nonai:		
Asiatic	3/10/—	3/10/—
Nordenham:		
Anglo-American	$14.00	.....
Norfolk:		
Anglo-American	$1.05	$2.20
Oran:		
Anglo-Persian	3/12/ 6	4/ 7/ 6
Oslo:		
Anglo-American	.....	.....
Asiatic	.....	*kr. 75
Anglo-Persian	*3/ 7/ 6	*4/ 2/ 6
Palembang (Pladjoe):		
Asiatic	3/10/—	3/15/—
Palermo:		
Asiatic	*3/12/ 6	*4/10/—
Pangkalan-Bernandan:		
Asiatic	3/10/—	3/15/—

Port and company—	Heavy £ s. d.	Light £ s. d.
Penang:		
Asiatic	3/10/—	3/15/—
Perim:		
Asiatic	3/12/ 6	3/17/ 6
Pernambuco:		
Anglo-Mexican	*$14.80	($)
Asiatic	$14.80	($)
Piraeus:		
Asiatic	*3/10/—	($)
Portland, Ore.:		
Anglo-American	‡$1.25	‡$1.45
Asiatic	$1.10	.....
Point Wells:		
Anglo-American	‡$1.10	‡$1.46
Ponta Delgada:		
Anglo-American	*$21.00	*$25.00
Port Said:		
Anglo-American	*$17.00	*$18.00
Asiatic	3/12/ 6	($)
Anglo-Persian	3/12/ 6	4/10/—
Port Sudan:		
Anglo-Persian	3/17/ 6	4/ 2/ 6
Asiatic	3/17/ 6	4/ 2/ 6
Puerto Mexico:		
Asiatic—"C" grade	‡$1.15	.....
Asiatic—Thin	‡$1.35	.....
Anglo-Mexican — "C" grade	$1.20	.....
Anglo-Mexican — Thin	$1.40	.....
Pulo Bukom:		
Asiatic	3/10/—	3/15/—
Prince Rupert:		
Anglo-American	$1.36	$2.35
Pulo Samboe:		
Asiatic	3/10/—	3/15/—
Quebec:		
Anglo-American	$1.55	.....
Anglo-Mexican	‡$1.55	.....
Asiatic	‡$1.55	.....
Rangoon:		
Anglo-Persian	4/—/—	4/10/—
Richmond:		
Anglo-American	$0.89	$1.04
Rio de Janeiro:		
Anglo-American	$15.00	.....
Anglo-Mexican	$15.00	($)
Asiatic	$15.00	($)
Rotterdam:		
Anglo-American	.....	$16.00
Asiatic	*Fl. 41	*Fl. 50
Rouen:		
Anglo-American	3/12/ 6	4/10/—
Asiatic	*3/12/ 6	*4/10/—
Sabang:		
Asiatic	3/10/—	3/15/—
Saigon:		
Asiatic	*3/10/—	*3/15/—
St. John, N. B.:		
Anglo-American	$1.60	.....
St. Nazaire:		
Asiatic	3/12/ 6	4/10/—
St. Vincent:		
Asiatic	3/ 2/ 6	.....
Saltozaki:		
Asiatic	3/10/—	3/15/—
San Diego:		
Anglo-American	$0.90	‡$1.26
San Francisco:		
Anglo-American	$0.89	$1.04½
Asiatic	‡$0.89	‡$1.04
San Juan:		
Anglo-American	($)	.....
Asiatic	‡$1.60	.....
San Pedro:		
Anglo-American	$0.85	‡$1.15¼
Los Angeles:		
Asiatic	‡$0.85	‡$1.00
Santos:		
Anglo-Mexican	$15.30	.....
Seattle:		
Anglo-American	‡$1.10	‡$1.46¼
Asiatic	‡$1.10	‡$1.25
Shanghai:		
Anglo-American	$17.00	$18.25
Asiatic	3/10/—	3/15/—
Singapore:		
Anglo-American	$17.00	$18.25
Asiatic	3/10/—	3/15/—
Sourabaya:		
Asiatic	3/10/—	3/15/—

Port and company—	Heavy £ s. d.	Light £ s. d.
St. Thomas:		
Anglo-American	‡$1.10	‡$1.80
Stockholm:		
Asiatic	.....	*kr. 75
Suez:		
Asiatic	4/—/—	4/15/—
Sydney:		
Asiatic	3/17/ 6	4/ 2/ 6
Anglo-Persian	3/17/ 6	4/ 2/ 6
Tacoma:		
Anglo-American	‡$1.10	‡$1.61½
Talara:		
Anglo-American	‡$1.60	$2.50
Tampico:		
Anglo-American	.....	.....
Anglo-Mexican	.....	.....
Anglo-Mexican — "C" grade	‡$1.04	($)
Anglo-Mexican—Thick	‡$1.15	.....
Anglo-Mexican — Thin	‡$1.25	.....
Asiatic—"C" grade	‡$1.00	($)
Asiatic—Thick	‡$1.10	($)
Asiatic—Thin	‡$1.20	($)
Tarakan:		
Asiatic	3/—/—	3/—/—
Texas City:		
Anglo-American	‡$1.00	.....
Tocopilla:		
Anglo-American	$13.00	.....
Trieste:		
Anglo-American	$13.00	.....
Asiatic	*3/12/ 6	*4/10/—
Anglo-Persian	*3/12/ 6	($)
Trinidad:		
Anglo-American	$0.95	.....
Asiatic	$1.10	($)
Tuxpam:		
Anglo-Mexican—Thick	‡$1.30	.....
Anglo-Mexican — Thin	‡$1.40	.....
Asiatic—Thick	‡$1.25	.....
Asiatic—Thin	‡$1.40	.....
Vado:		
Anglo-American	.....	.....
Asiatic	*3/12/ 6	*4/10/—
Valparaiso:		
Anglo-American	‡$2.05	‡$2.63
Anglo-Mexican	†‡$2.00	.....
Asiatic	‡$2.00	.....
Vancouver:		
Anglo-American	‡$1.15	$1.97½
Asiatic	‡$1.15	$1.65
Venice:		
Anglo-American	$13.00	$16.00
Asiatic	*3/12/ 6	4/10/—
Vera Cruz:		
Anglo-Mexican	‡$1.15	.....
Asiatic	‡$1.05	.....
Victoria:		
Anglo-American	$1.32½	.....
Asiatic	4/ 5/—	4/ 5/—
Wellington:		
Asiatic	3/17/ 6	4/ 2/ 6
Willbridge:		
Anglo-American	‡$1.10	$1.46¼
Yokohama:		
Anglo-American	$17.00	$18.25
Asiatic	4/10/—	3/15/—

*Per metric ton.
†Plux taxes.
‡Per 42 American gallons.
§On inquiry.

GASOLINE PLANT IN JAPAN



Japan Oil Co.'s plant in Nishigama oil field, Niigata prefecture.

OIL LEGISLATION IN OTHER LANDS

(Continued from Page 137)

amended on January 10, 1928, and corresponding regulations issued by the executive in March of the same year. During the period from December, 1925, to November, 1927, the department of industry consistently refused to grant drilling permits to companies that had not filed applications for confirmatory concessions, and inasmuch as this was the case with all the producing companies, drilling was greatly curtailed. Thus, one of the major interests in Mexico was refused 68 drilling permits during 1926, the issuances of which would have contributed greatly to the maintenance of the industry in Mexico, and have correspondingly reduced development in other fields. It should be added that the policy of denying drilling permits after the passage of the petroleum law of 1925 was in direct contradiction to that which had been heretofore pursued by the Mexican Government in its controversy with the oil companies, even during the acute period of the "Carranza decrees" of 1918.

Applications Pending

Under the amendments to the petroleum law and regulations of April, 1928, the oil companies in Mexico filed applications for recognition of their rights, but to date a bare 40 per cent of these applications have been disposed of, and among the applications pending administrative ruling are many of the actually producing properties. Coincidentally with this situation, and in no small measure by reason thereof, oil companies in Mexico either acquired, or began operating, properties in other portions of the world, especially Venezuela and West Texas. Thus, today, the major oil companies in Mexico have developed production in one or more new fields which more than counterbalances the decrease in their activities in Mexico.

American capital went into Venezuelan oil development in 1927 to the extent of $25,000,000; and while figures are not yet available for 1928, it can be stated at least a like amount was invested in 1928. European capital no doubt also flowed into Venezuela. On the other hand, the value of American investments in Mexico in the oil industry decreased by $50,000,000 in 1927, and this decline continued in 1928, and is being accelerated in 1929.

Taxation Changes

Taxation has also had a direct and serious effect on Mexican petroleum production. The production and export taxes were decreed in times of record bonanza yield (1921) and of high fuel oil prices. Neither condition prevails today. Despite the marked decline in fuel oil prices, the oil companies pay taxes on a minimum value of $1.25 per barrel for fuel oil where the actual market value is nearer 85 cents per barrel. Again, new taxes have been levied, so that where formerly 33 per cent of the total burden was represented by indirect taxation and 68 per cent by direct taxation, the inverse is now the case.

The production and export taxes are in reality export taxes. Accordingly, Mexican production must be sold in competition with production from other countries. Today the chief competitors are Venezuela and West Texas. The total tax on oil in Venezuela fluctuates between 14.2 and 16.5 centavos (Mexican currency) per barrel. The State of Texas levies a production tax equivalent to 6 centavos (Mexican currency) per barrel. The total tax per barrel of oil produced in Mexico by one of the largest operating companies in 1928 amounted to 51.2 centavos (Mexican currency) per barrel. Companies with a small production would, no doubt, show a higher rate per barrel.

Very obviously changes in Mexican legislation and in the interpretation of existing laws and regulations are necessary if Mexican petroleum production is to be maintained and any attempt made to bring production back to previous high records.

Venezuela and Brazil

Venezuela has had no proposed or actual legislation effecting the oil industry during the year just passed. Brazil, with no commercial production, gives some promise of extensive exploration work if and when equitable legislation is passed protecting the rights of all concerned. Sporadic attempts have been made to enact such laws with little success to date.

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Air Hoists
Rock Drills
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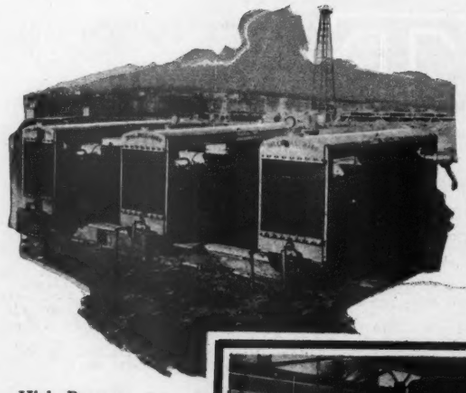
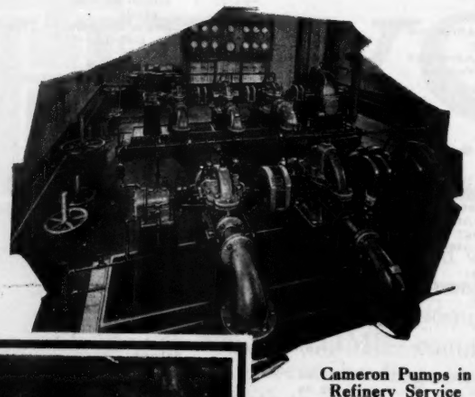
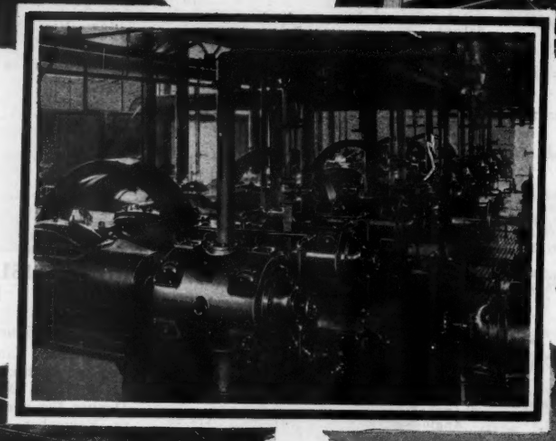
Concrete Breakers
Condensers
Aftercoolers
Oil-electric Locomotives



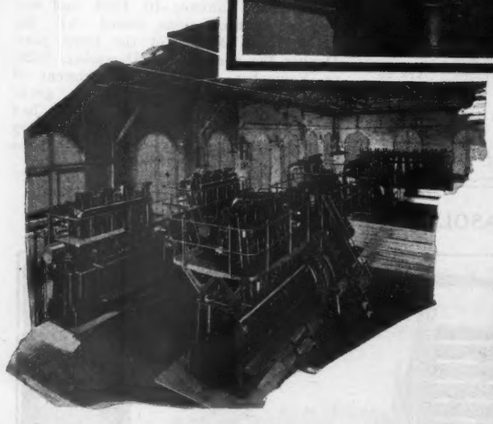
High Pressure Portable Compressors



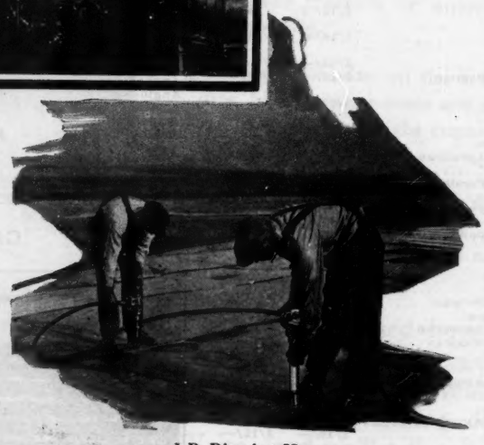
Cameron Pumps in Refinery Service



Type "XG" Compressor Installation



Type "PR" Oil-Engine Generators



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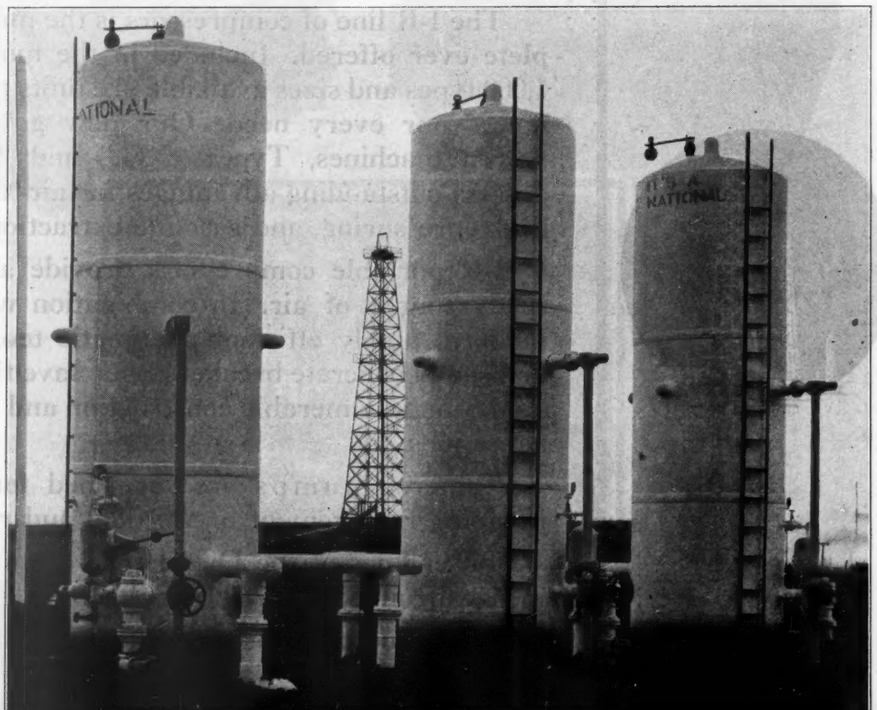

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For High Pressures or Low Pressures

NATIONAL TANK COMPANY

TULSA, OKLA.

OIL SITUATION IN POLAND UNFAVORABLE

(Continued from Page 145)

land during the first six months of the current year were as follows:

Country of destination—	Gasoline (bbls.)	Kerosene (bbls.)
Czechoslovakia	83,037	41,292
Austria	7,854	11,269
Danzig	33,669	80,577
Germany	451	1,023
Switzerland	1,870	473
Hungary	94	426
All others	26,529	55,041
Total	153,504	190,101

It is evident that while Poland is in position to take care of its domestic requirements for years to come, it does not threaten to develop into an extensive competitor in other world markets and that, in time, it will probably become a buyer, on a larger scale, of refined products produced in other parts of the world. The present statistical situation in Poland, incidentally, is ideal from the viewpoint of the cartel.

RATIONALIZATION IS OUTSTANDING NEED

(Continued from Page 133)

are being stoked with this fuel, which is eminently suited for that purpose.

The same can be said of asphalt and the many products derived therefrom. In addition to being used for the modernization of roads there is a continual increase in the extent to which asphalt products are being applied for industrial purposes, the possibilities of which are also only in the first stages of development. In order to be prepared as well as possible also in this direction we have combined our interests with those of the Flintkote Co. of Boston, a concern of many years' standing in the asphalt manufacturing and selling line.

Technical Advance

In the meantime our technical staff is unrelaxing in its efforts to have the extraction and refining of the crude oil carried out by the most modern means and in the most economical manner and to convert products of little value into more valuable ones.

The research work conducted in our laboratories and experimental plants is directed also towards the conversion, by chemical means, of the by-products of the petroleum industry into products which find a ready outlet in agriculture and in the chemical industry. One of the first steps in this new direction has been the establishing of a factory at Velzen (Holland) for the manufacture of fertilizers, for which object the "N. V. Maatschappij tot Exploitaie van Kooksovengassen (Mekog)" has been founded. The intention is, together with the co-founders of this new company, the "Koninklijke Nederlandsche Hoogovens en Staalfabrieken" (Royal Dutch Blast Furnaces and Steel Works), to manufacture various fertilizers from the coke furnace gases of the blast-furnaces and to utilize the experience acquired in this industry in similar factories which it is proposed to erect in various parts of the world close to our oil fields, possibly in combination with other companies.

Tanker Fleet

Our fleet, supplemented by chartered vessels, was continuously in service. At the close of the year our group disposed of a tonnage of about 1,878,747 tons, of which 359,226 tons belong to the Eagle Oil Transport Co., Ltd.

During the year under review this fleet transported roughly 15,435,000 tons of cargo, including 2,535,000 tons carried by the Eagle Oil Transport Co., Ltd.

Our group is continuing gradually to replace its steamships by motor-driven craft, which, it is hardly necessary to say, have proved in the course of years to be most economical and efficient in working. It is gratifying to state that the high hopes entertained from our modern motor vessels have materialized in every respect.

Now that 12 motor-driven ships of 10,000 tons carrying capacity have, among others, been running a year and more, we have found that as regards working expenses, cost of repairs to the engines and number of days laid up for repairs these vessels compare most favorably with our steamships.

Lub. oils (bbls.)	Gas oil (bbls.)	Paraffin wax and candles (lbs.)	Greases, etc. (lbs.)
27,671	12,050	1,003,093	976,638
28,812	68,586	1,360,238	2,976,210
53,781	24,433	11,426,442	1,906,979
4,942	558	3,364,220	10,198,480
1,134	46,813	242,506	656,971
5,376	595	396,828	451,943
26,194	39,201	6,933,467	2,552,610
147,910	192,235	24,726,794	19,759,831

Our group by its normal development has come to bear a strong international character. Not only do we belong to the principal producers in nearly all countries where oil is extracted, but our products are also distributed over practically the whole world.

Our shareholders will naturally be interested to hear what the expectations are in regard to the future of the oil industry in general and of our company in particular. Oil is such a valuable product and the technical development of economic life has come to be so reliant upon the use of oil products that our expectations in respect to the oil industry in general cannot but be optimistic. As to our own company we are convinced that, independent of the result of the negotiations for rationalization of the oil industry, both in respect to production and as to distribution, it has a bright future before it.

Regarding the most important branches of our industry attention is drawn to the following particulars:

Dutch East Indies

By virtue of an act of July 21, 1928, on the following September 28 the minister of the colonies, on behalf of the Dutch East Indian government, entered into seven contracts with the Bataafsche Petroleum Maatschappij on the basis of Article 5a of the East Indian Mining Act in respect of a number of fields in Palembang, Atjeh and dependencies and the southern and eastern department of Borneo. The operations in thes new territories were begun immediately and are being energetically pursued. The Bataafsche Petroleum Maatschappij obtained an option for the extraction of petroleum, etc., in the mining concessions Sadjau and Koetei VI in the southern and eastern department of Borneo, held respectively by the "Royalty Maatschappij Boelongan" and the "Sekoerau Petroleum Maatschappij."

The crude oil production amounted to:

	Metric tons 1928	1927
Sumatra (excl. Djambi)	753,224	654,349
Borneo (excl. Tarakan)	1,348,385	1,221,124
Tarakan	1,304,399	1,227,288
Java	455,036	267,997
Ceram	40,305	37,121
Total	3,906,399	3,407,879

The production during 1928 has again increased, especially that from the fields under Administrations Pangkalan Brandan and Tjepoe.

Naturally this increase in production has been accompanied by extension and improvement of the means of transport, storage and refining.

The expansion of our industry also resulted in a considerable increase of our personnel. There were employed in our installations in the Dutch East Indies 2,645 Europeans and 47,600 Asiatics, as against 2,076 Europeans and upwards of 40,000 Asiatics on December 31, 1927.

Large sums had again to be voted for additional housing accommodation, whilst the ever-increasing production necessitated not only expansion of the refineries but also extension of the pipe lines, 600 kilometers of new lines being laid for our fields and those of the N.I.A.M. (Nederlandsch-Indische Aardolie Maatschappij), in consequence of which the total length of pipe lines laid down by us in the Indies amounted to 4,500 kilometers.

Great difficulties were experienced throughout the year in securing a sufficient number of laborers.

N.I.A.M.

By an act of February 16, 1928, (Dutch State Gazette No. 34) there were added to the N.I.A.M.'s sphere of operations a field on and in the Aroebaai (east coast of Sumatra) and the island of Boenjoe (South and East Department of Borneo).

The Djambi crude oil production for 1928 shows with 64,190 metric tons, a large increase on the 1927 production of 40,230 metric tons.

In the course of the year three wells were brought in at Badjoebang with an aggregate initial production of 230 cubic meters per day.

The working of shallow wells at Botoeng was continued; the deeper layers are being explored with a second deep well.

Further, deep wells are being drilled or prepared in the Meleboeai, Tempino, Mengkanding and Kenali Assem Fields.

The first rotary well in the Aroebaai Field yielded an initial daily production of 30 cubic meters oil and 20,500 cubic meters gas; the total crude oil production from this field in 1928 amounted to 400 metric tons. At the time of going to press a report was received that a new well has been brought in on this field with an initial production of 120 cubic meters oil and 53,000 cubic meters gas per day.

At Poeloe Boenjoe, on taking over this field, after it had been explored by the East Indian government, the N.I.A.M. experienced considerable delay owing to shortage of labor.

In the middle of February, 1929, a deep well was begun at Boenjoe.

Egypt

The daily crude oil production showed an advance of 20 per cent on that at the beginning of 1928, the total being 268,461 metric tons.

The refinery at Suez was extended and is to undergo still further expansion.

Sarawak

The crude oil production had increased by 6 per cent compared with the daily production at the beginning of the year, the total being 751,092 metric tons.

The average daily production was about 2,000 metric tons. Just as in the Dutch East Indies, here, too, there was a considerable increase in the use of the rotary system of drilling.

Rumania

Rumania's total net production in 1928 exceeded the record of 1927 by 16.6 per cent, aggregating 4,268,000 tons. This increase is mainly due to deeper layers having been opened up; 241,000 meters were drilled in 1928 as against 247,000 in 1927 and 267,000 in 1926.

Notwithstanding greater production the Rumanian oil industry was unable to yield a satisfactory profit. The two principal causes are the heavy fiscal burdens which the industry has to bear and the murderous competition which the Rumanian oil producers encounter in marketing their products, both in Rumania and elsewhere, not only from each other but also from the Soviet government.

A revision of the Mining Act of 1924 was taken in hand, which was completed in March last. Though in theory the unequal treatment of foreign and national capitals has been abolished, the new act still contains too much that is vague and uncertain to allow of an opinion being expressed as to the effect of its administration.

Strong measures towards minimizing expenditure and increasing the yield continued to be taken by the Astra Romana.

The difficult conditions under which we have had to work in Rumania have led to the results of the Astra Romana for 1928 being such as to allow—for the first time since the war—of no dividend being declared.

In 1928 the Astra Romana were successful in reaching a settlement with the Rumanian government in a matter that has long been pending; the government has now undertaken to pay also the second half of the compensation fixed for the loss sustained by the Astra through the war.

United States

The gross production of crude oil of the companies belonging to our group amounted to:

	Metric tons 1928	1927
Shell Pet. Corp. (Roxana Pet. Corp.)	3,890,767	2,694,312
Shell Oil Co. (Shell Co. of California)	3,812,233	3,203,719
Total	7,703,000	5,898,031

The production of these companies could have been greater, but in view of what has already been reported, it was restricted. Thus we have fairly assisted towards the avoidance of wastage of crude oil with the resultant consequences for the future.

The Shell Oil Co.'s oil reserve was appreciably enlarged by the discovery of rich, deeper lying, producing layers in the fields of Long Beach and Santa Fe Springs.

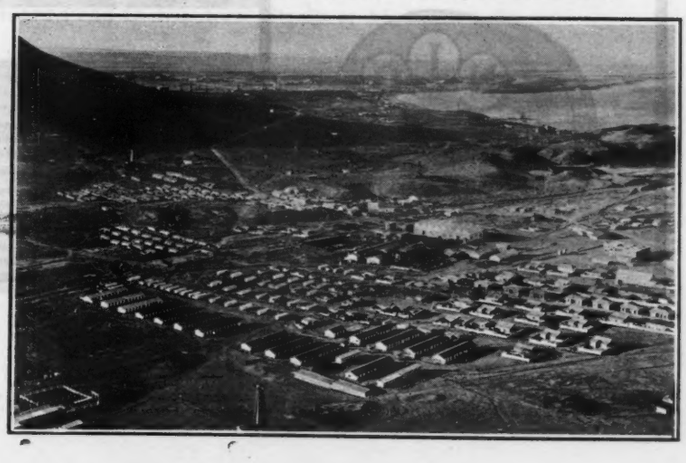
The Shell Petroleum Corp. has, among others, very considerable interests in the new oil fields of West Texas, whilst also its Kansas fields have developed particularly favorably.

Our companies have applied themselves more than ever to scientific research and improvement of refining technique, in order to place the industry in a position to obtain the best results. With a view to centralizing and consolidating this work a new company (Shell Development Co.) was established and large laboratories were built, in which a number of chemists are being employed. In connection herewith another company (Shell Chemical Co.) was established to commercialize the results of this work.

No less activity was shown in other directions.

The new refinery at Houston is connected up with the West Texas oil country by a 10-inch pipe line 720 kilometers in length with numerous branches to the fields. A number of large tanks were built and the capacities of several existing cracking plants and refineries considerably enlarged. All this work led to an increase of the capital of the Shell

VIEW OF COMODORO RIVADAVIA, ARGENTINA



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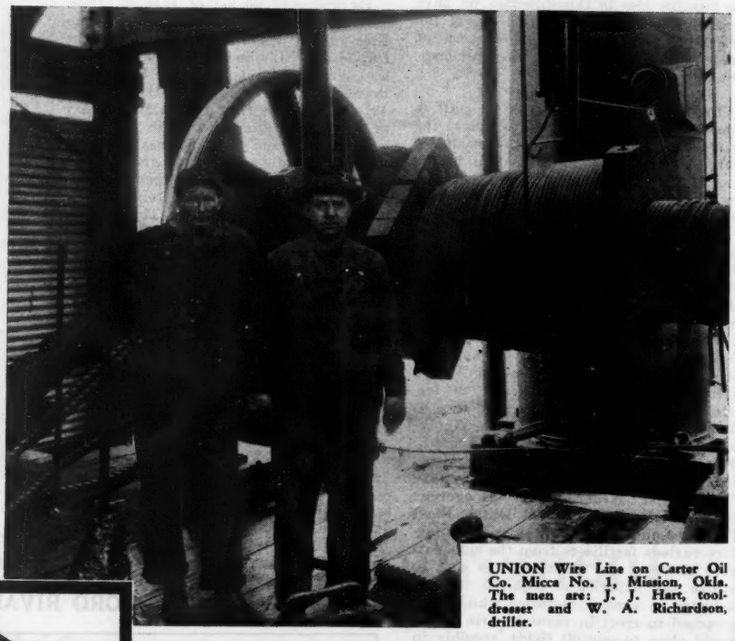
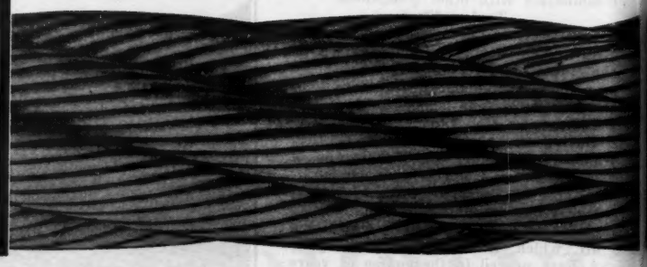


UNION Wire Line on Carter Oil Co. Micca No. 1, Mission, Okla. The men are: J. J. Hart, tool-dresser and W. A. Richardson, driller.



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Factory: 21st and Manchester, Kansas City

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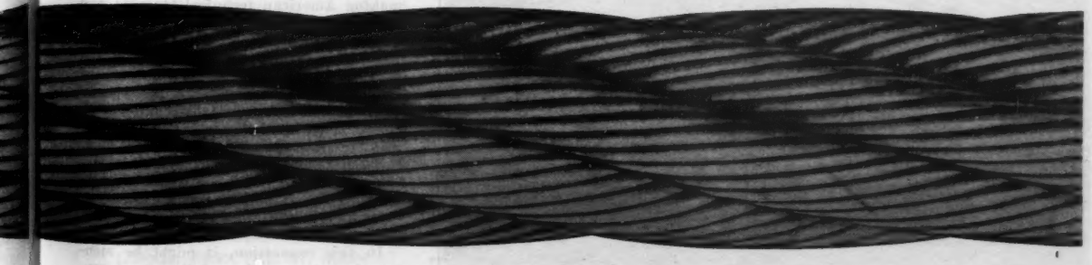
Mid-Continent and Eastern Oil Field Distributors—Stocks at All U. S. A. Stores



Union Oil Corp., all of which were given up by the shareholders.

Negotiations took place with the New England Refining Co.—who owns a large distributing business in the New England States—for the acquisition of its properties, which negotiations were brought to a successful conclusion. In connection herewith a new company, the Shell Eastern Petroleum Products, was established with a capital of 500,000 shares of no nominal value, of which 182,142 have been issued.

During a part of the year prices, particularly for benzine, improved, especially in the Mid-Continent, which favorably influenced the financial results obtained by us in America in the past year.

Mexico

In March, 1928, the Mexican government published the new regulations for the administration of the petroleum law, and these on the whole may be considered as satisfactory.

La Corona

During 1928 production again somewhat declined, amounting to 528,979 metric tons as against 594.753 tons in 1927. This production is derived mainly from the old Panuco and Cacalilao Fields, which are gradually becoming exhausted.

The exploration work of the "Unida" (in which the Aguila and Corona have equal interests) was continued particularly in Tabasco (southeastern Mexico). Owing to difficulties of a varying nature the work is progressing but slowly and no definite results have as yet been obtained.

El Aguila (Mexican Eagle)

The 1928 production amounted to 893,681 metric tons as against 987.528 tons in 1927; of this total the Filisola Field (southeastern Mexico) yielded 387,138 tons as compared with 394,582 tons in 1927.

The Minatitlan refinery was reequipped on modern lines, which has resulted in economies being effected. In view of the favorable results obtained in the Tonala Field, further expansion and improvement of this refinery is contemplated. Moreover, dredging operations have been begun in the Coatzacoalcos River, which will make the refinery at Minatitlan accessible to ships of deeper draught.

In Tonala the first well was completed on April 13, 1928, being brought in with an initial production of about 2,000 bbls. per day. Since that date several good wells have come in and there is every reason to expect good production from this field.' The laying of a pipe line for the transportation of the oil is in hand and it is expected to be ready before this report goes to press.

The well which was brought in at Mecatepec in February, 1928, continues to yield now and then oil free of water and has produced to date about 24.000 metric tons. Various circumstances have somewhat delayed the further exploration of these fields; the results of several drillings are now being awaited.

Curacao

Again in 1928 the year was marked by great activity, both the refining and the storage capacities being further enlarged, while also the fleet of the Curacaosche Scheepvaart Maatschappij was augmented by new tonnage. The shipment of fuel from Caracas Bay proceeded satisfactorily.

A benzine installation and loading station is in course of erection on Bullen Bay, west of Willemstad.

Venezuela

The Caribbean Petroleum Co.:

A further considerable increase in the crude oil production is to be reported. In 1928, 2,040,759 metric tons; 1927, 1,535,856 metric tons.

No particular changes took place in the business.

The Venezuelan Oil Concessions, Ltd.:

Production. In 1928, 5,084,580 metric tons; 1927, 2,961,857 metric tons.

In connection with the increasing production from the Lagunillas Field the tank installation was enlarged. At Punta Piedras, south of Maracaibo, a new jetty was built for the shipment of crude oil. Where necessary, pumping stations have been built and pipe lines laid for the transportation of the production.

Owing to important wells having come in in the Ambrosio Field north of La Rosa at the end of the year, the prospects in that part have been considerably improved.

Colon Oil Corp.:

The company was established on June 26, 1928, with the object of consolidating the interests of our group and of the Carib Syndicate in the Colon Development Co.

In order to arrive as soon as possible at a regular exploitation of the fields in the Colon district a pipe line about 140 kilometers long is now being laid to the shore of the Lake of Maracaibo, and in anticipation of the completion of this line drilling activities have been extended.

Trinidad

The figures for the production were: In 1928, 65,187 metric tons; 1927, 65,841 metric tons.

Prospects have been appreciably improved of late by the striking of oil in the deeper layers in the Parry Lands.

Argentina

The results of the wells drilled in the fields near Comodoro Rivadavia belonging to the companies in which we have interests have answered the expectations of which mention was made in our previous report.

A potential production of more than 9,000 bbls. per day, the greater part of which is light oil, has now been opened up.

Nearly all the wells, however, had to be kept shut in, owing to great delay experienced in the erection of the refinery at Buenos Aires due to the necessary building permits not yet having been granted. In view hereof drilling has had to be considerably restricted.

DISCUSS DEVELOPMENT IN ALBERTA OIL FIELD

(Continued from Page 152)

that oil and gas coming up through this fault had impregnated the limestone and other porous strata to which they came. He also felt, because of the narrowness of the belt, that more important or at least larger belts would be found in other parts of Alberta. The fact that the geology of the plains region east of the foothills was more regular and less disturbed than the similar regions east of the foothills of the Rockies in the United States was, in his view, a promising feature.

Mr. Coste criticized the waste of gas in the Turner Valley. One of the saddest spectacles in Canada at the present moment, he declared, was to see Turner Valley producing wells making about $12.000 a day out of 200 bbls. of crude petroleum and from 2,000 to 2,500 bbls. of crude naphtha, while permitting the escape of natural gas worth about $100,000 a day even if the gas were estimated at 50 cents per 1,000 feet instead of $1 which he believed to be nearer its real value. He thought this an indefensible waste of natural resources and was glad to know that a government commission is now investigating the whole matter with the object of drawing up regulations to save this valuable gas commodity for economic use later. He particularly criticized those who drilled wells without taking every modern measure to permit them closing off the well if they got production, too many wells altogether in Turner Valley having come in "uncontrolled and uncontrollable." In other countries owners of such wells were compelled to "kill" such wells by choking them with mud forced down to the lime, as such wells depleted not only the lands leased by the company in question but all wells on the same structure. He believed that sooner or later, by piping to Canadian cities or exporting to communities south of the international boundary, a market could be found for all this gas now being wasted.

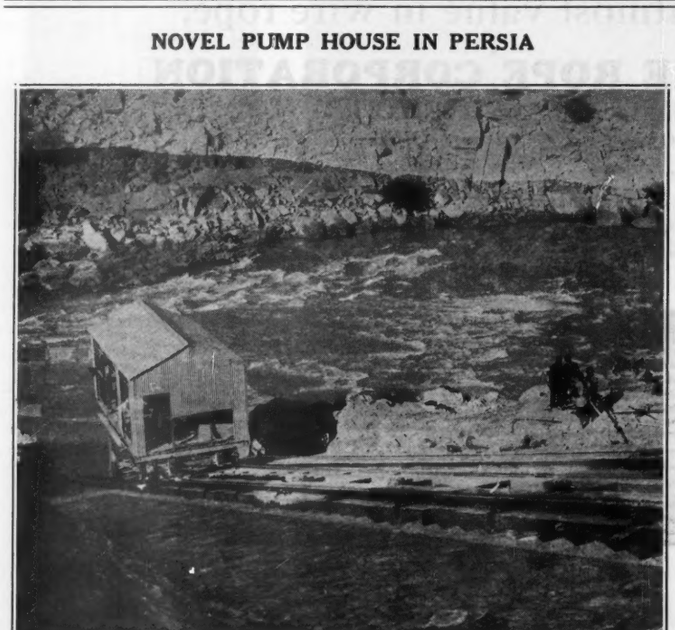
Mr. McQueen's Views

Chairman W. R. Rogers invited A. M. McQueen, vice president of Imperial Oil, Ltd., to comment on Mr. Coste's remarks. Mr. McQueen agreed that the waste of gas was lamentable, and stated that his company was ready and willing to co-operate with the government in any adequate measures they might devise. The government had been so advised. The company had drilled many wells in the Turner Valley and would drill many more. He could say that since the first Imperial Oil well to come into big production, Royalite's No. 4, there had not been a single well drilled without the company taking every necessary measure to permit the well to be shut off, thus conserving gas.

He pointed out, however, that the company could not be expected to stop production of crude oil or naphtha from the wet gas coming from the well if their neighbor across the fence were permitted to let his well run unimpeded, as that meant the latter was drawing from the Imperial supply as well as his own.

Imperial Oil, Ltd., has spent millions of dollars in Alberta and the West generally to try out the conclusions of Doctor Hopkins and the geological department. Some success had been achieved and the company did not regret any of the millions it had expended on the basis of reports of its geologists. It was prepared to expend millions of dollars more and a vigorous drilling campaign would go on for years just so long as that department felt that in Alberta were good possibilities for tapping new oil wealth.

NOVEL PUMP HOUSE IN PERSIA



Pump house on slipway at Godar Landor—the great rise in the River Karun in flood season makes this movable pump house necessary.

RUSSIA STARTING ON FIVE-YEAR PROGRAM

(Continued from Page 147)

need for this prospecting may be realized when it is pointed out that approximately 4,500,000 tons of the annual crude production planned for 1932-33 must come from fields which have not yet been proved.

Consummation of the Soviet development plan along the lines laid down in the foregoing, of course, will have a profound effect upon the world oil situation, and will be reflected in the increase in Russian competition in world oil markets where the United States is now the principal seller. According to the plans laid down by the Soviet, the petroleum industry in that country has under consideration the problem of the distribution of the functions between the principal producing regions. This is expected to take the form of the assigning the domestic trade to the Emba district, utilizing the output of the Grozny and Azerbaijan regions principally for export.

American oil field and refining equipment, as well as American technical experts in these fields, are being utilized to an increasing extent by the Soviet government, and indications are that the United States will be drawn upon more heavily in working out the five-year expansion program in the petroleum industry. This development plan, incidentally, is part of a five-year expansion program including other branches of Russian industry as well.

American Equipment

As the plan of reconstruction and new development in the Soviet petroleum industry is carried forward, it is stated, the United States may well prove to be the most important of all countries as a source of Soviet exports for the following reason: As industrial production in the Soviet Union is concentrated in large enterprises and is based on the principle of standardized mass production, American machines and machine tools are the most suitable, since their construction and design is likewise adapted, in style and volume, for large plants and standardized production. In addition, it is stated by Soviet authorities, American machines are technically superior to the European product in many ways.

The possibility of direct American participation in development of the Soviet oil industry is hinted in the plan of development as drawn up by the Soviet government, which says, in part:

"The influence of American technique will penetrate into Soviet national economy in other ways besides the importation of American machinery, namely, by making American technical training and experience available for Soviet industries by means of technical assistance contracts with large American concerns, through engaging American experts for work in the U.S.S.R., and delegating special Soviet commissions and individual specialists to the United States to study American production methods on the spot, through demonstrations of American machinery sent to the U.S.S.R. and finally through the establishment of American enterprise in the Soviet Union on a concession basis."

In this connection, it might be mentioned that a number of Soviet oil representatives have been in the United States during recent months inspecting oil production and refining methods in various parts of the country, and placing sizable contracts for American drilling equipment and refining equipment and supplies.

Of Interest to Sales Departments

Gasoline, Kerosene, And Lubricating Oil Market in Australia

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 21.—Dr. John W. Frey, Petroleum Section, Minerals Division of the Department of Commerce, has prepared an interesting analysis of the gasoline, kerosene and lubricating oil market in Australia.

Australia, says Doctor Frey, a continent of almost 3,000,000 square miles, having a population of a little over 6,000,000, or slightly exceeding two people per square mile, has more automobiles per capita than any other country in the world outside of the United States and Canada, and ranks fifth in total registrations.

"On January 1, 1928," says Doctor Frey, "there were 464,225 automobiles, motor trucks, and buses registered, compared with 23,253,882 in the United States, 1,219,477 in Great Britain, 960,000 in France, 939,479 in Canada and 422,300 in Germany.

"The registration figure is impressive, considering that there is no production of petroleum in Australia and that the nearest source of supply is approximately 3,900 miles from its populous area. In addition, Australia has 130 civil airplanes, which flew approximately 1,500,000 miles in 1928, as well as thousands of gasoline and kerosene tractors and stationary gasoline engines."

The fact that Australia has expended approximately $1,060,000 in an effort to discover commercially important deposits of oil to make the Commonwealth more self-sufficient in its petroleum requirements as shown by the report of trade commissioner, Charles F. Baldwin, is referred to. Although experimental drilling has been carried on without success. Dr. W. G. Woolnough, Commonwealth's geologist, in a recent report expressed the opinion that "there seems to be a reasonable chance in spite of many disappointments and false trails, that Australia will yet enter the ranks of oil producing countries."

Two Refineries

Although Australia has no domestic supply of crude petroleum, it has two refineries—the Commonwealth Oil Refineries (Ltd.), at Laverton, Victoria, and one operated by the Shell Co., at Clyde, New South Wales. The Commonwealth refinery is capitalized at £850,000 and the shares are divided between the government and the Anglo-Persian Oil Co., the government retaining the controlling interest by two votes. This refinery produces annually about 155,000 bbls. of gasoline, 198,000 of kerosene and 357,000 of fuel oil, while the Shell plant probably refines about 286,000 bbls. of crude a year. The imports of crude have increased considerably over those of 1924-25, but during the last few years there has been no large gain. The two principal sources of crude oil have been the Netherland East Indies and Persia. The total importation of crude amounted to 2,126,196 in the year 1927-28.

The importation of lubricating oil into Australia in 1927-28 amounted to 349,487 bbls., with the United States furnishing 348,586 bbls.

LARGE ELECTRICAL SIGN

SHREVEPORT, La., Dec. 21.—Sparco Gasoline Co., marketing subsidiary of the Shreveport-El Dorado Pipe Line Co., has contracted for what is claimed to be the largest electrical sign in the South, which is to be placed on the roof of one of Shreveport's downtown buildings.

The sign will measure 48 by 45 feet and will have many varied effects. Opening the display with a Neon tube gasoline pump on a background of dark blue vari-colored lights will circle around it, turning in the process from a dark blue to a light green. When this phase of the display ends the Sparco message in tri-color Neon tubing will be flashed.

The blue-green gasoline featured by the display will be presented in a rectangular frame bordered with many fantastic curves of flashing lights in various shades of blue and green. The display, to be ready for service about February 1, represents an investment of approximately $20,000.

RAPID GAINS IN USE OF FUEL OIL BY INDUSTRIES

There is scarcely an important industry that is not a potential user of oil for fuel in connection with process work requiring heat, according to data compiled by the American Petroleum Institute. At the present time considerable of this process work requires the use of lighter oils. Some of the more important industries using and investigating oil heat for this purpose are the following: the automotive industry, in heat treating, forging, and oven drying operations; cement industry, for firing kilns; ceramic field, for heating ovens; the glass industry, for application ranging from the melting of the raw material to the annealing of the finished product; the brass foundries, rubber factories, paper and pulp mills. The iron and steel industry, already a large user of oil, has many applications in heat treating and process work.

Oil has been used as a fuel in the heating of buildings in the United States for nearly 50 years, but its widespread utilization and its application to domestic heating are distinct developments of the latter half of the post-ward period. On the Pacific Coast and in portions of the Middle West oil has been used as a fuel for several decades, but along the Atlantic Coast, and particularly in the cities from Portland, Me., to Washington, D. C., the most rapid strides have been made only within the past five or six years.

The first installations were made chiefly in existing boiler plants where coal had previously been burned. The experience thus gained established the possibilities of oil burning, and it has been given careful consideration by architects and builders in planning new structures. During the war period, building programs were suspended or postponed in order that material and labor might be diverted to strategically more important purposes. When the United States had recovered from the postwar depression of 1921, a national enthusiasm for building concentrated within a few years all of the construction which might ordinarily have been spread over a number of the preceding years.

During the period of suspended building, crude oil production in the United States increased from 335,000,000 bbls. in 1917 to 732,000,000 bbls. in 1923, with the result that an ample supply of oil was available coincident with the renewal of building activity. The inherent qualities of oil as fuel in urban heating, coupled with the development of improved burners and definite sales' stimulation by oil producers and burner manufacturers resulted in a widespread adoption of oil as a fuel for commercial and domestic heating. Oil burning has been adopted in boiler plants of every type and size, from that of the central station, factory, office building, hotel, apartment house, hospital, theater and school down to the smaller plants.

BOAT SHIPMENTS ON OHIO RIVER TO SHOW INCREASE

Preparations are now under way to increase the use of the Ohio River in the transportation of crude oil and refined products during the coming year. The completion of the 9-foot channel has made the river navigable for large boats from the mouth of the river to the Pittsburgh area.

In connection with the conversion of the Tuscarora pipe line from crude oil to gasoline it is understood that a terminal will be established at Midland, Pa. The Standard Oil Co. of New Jersey expects to use the line in the transportation of gasoline from its Bayway, N. J., refinery across New Jersey and Pennsylvania to Midland. At the latter point the gasoline will be removed by boat to consuming points along the Ohio River. Three large barges were recently delivered at Midland from Baton Rouge, La.

Other companies will also use the Ohio River. It is now feasible to barge refined products from refineries located on the Mississippi River to bulk stations along the Ohio River. This was done to a limited extent during the past summer.

Along the Ohio River the Standard Oil Co. of Ohio through its subsidiary, the Latonia Refining Co., is operating a refinery at Latonia, Ky., on the river. Water transportation is practical for that company in shipments to its terminals in Ohio and also other large consuming points along the Ohio River. The movement by boat from Gulf refineries will also increase.

42 PER CENT GAIN IN CALIFORNIA SHIPMENTS

According to data compiled by the Western Petroleum Refiners Association 814,000,000 gallons of California gasoline passed through the Panama Canal during the first 10 months of 1929, destined to eastern United States ports. This is an increase of over 42 per cent if compared with shipments during the same period of 1928.

Gasoline continued to prove an increasing share of total California Panama Canal shipments. It constituted 80.8 per cent of the total, so far in 1929, while crude oil constituted 5.4 per cent. During the first 10 months of 1926, the ratio of gasoline shipments to crude shipments, through the canal, was 66.4 per cent, while the ratio during 10 months of 1929 equaled 1,491.6 per cent. The 814,000,000 gallons of gasoline shipped from California to eastern United States ports during 10 months of 1929 equaled over 27 per cent of total demand for gasoline from California refineries for that period.

DUNLOP EXTENDS SERVICE

The Dunlop Tire & Rubber Co., which with several other rubber companies has been experimenting with large service stations at which gasoline, lubricating oil and greases are sold as well as rubber goods and batteries, plans to extend this phase of its operations according to an official announcement.

The Dunlop company during the past few weeks has opened a chain of 35 retail stores in California. Twelve of these are located in Los Angeles and eight in San Francisco. Some of these stores offer a complete service to motorists. The company will expand the plan in other western cities.

Believe Tax Refund Privileges Abused In Several States

As in many other states North Dakota is having trouble with the refund provision of its gasoline tax. Citizens of North Dakota or those doing work in that State with tractors, stationary engines, or using gasoline for cleansing purposes may demand and be paid a refund for the money paid as taxes for such gasoline. The idea of this exemption is that the State wishes to tax gasoline used in automobiles, but does not want to impose a tax on tractors, stationary engines or cleaning establishments.

The North Dakota Highway Department, for whose benefit the tax was placed on gasoline, is protesting vigorously. During the first two months of 1929, the Highway Department received nothing, all the collections being paid out in refunds. It is anticipated that in 1930, the collections for the gas tax will amount to $4,000,000, but according to the statistics of 1929, about $1,500,000 will be paid back on refunds, leaving $2,500,000 to be used for state purposes. Of this the State Highway Department will receive $1,550,000.

For 1929, the collections are estimated at $2,286,000 with the last quarter collections not in yet. Of this amount, $783,000 was paid out as refunds, giving a net income to the Highway Department of $1,523,000 or $63,000 short of what the budget called for.

It is believed that the farmers of North Dakota are demanding rebates on all gasoline purchased and the legislature is expected to remedy the situation in some manner. It is proposed by one member that instead of a rebate being paid on gasoline sales for tractors, stationary engines and cleaning establishments, that such equipment and places be exempted from the personal property tax and that a straight tax be required upon all gasoline sales.

In North Dakota, the gasoline tax law provides that the State Highway Department only receives about two-thirds of the net collections, the other third going to the various counties of the State, to be disposed by the county commissioners.

Montana, which adjoins North Dakota, does not show as excessive refund payments but the situation there is giving the state officials concern. Up to November 30, 1929, Montana collected $3,283,696.28 and paid back to farmers and others who were entitled to refunds of the tax, the sum of $715,122.14. It is expected the drawback fund provides in the Treasury Department of Montana will show a deficit of 25 per cent by the end of the year, due to the heavy drafts for refunds.

Montana has a 5-cent tax per gallon and North Dakota has a 3-cent tax per gallon on all gasoline sales.

RE-ELECT WASSUM PRESIDENT

S. A. Wassum of Tekamah, Neb., was re-elected president of the Nebraska Independent Oil Men's Association at the annual meeting of the association held at Omaha. Mr. Wassum has served the association as president for the past two years.

C. C. Rosenberg of Lexington, Neb., was elected first vice president and O. J. Shaw, second vice president. J. W. Trenchard, R. J. Porter, G. A. Steele, S. T. Hudson, R. A. Ogier and Kile R. Martin are members of the board of directors.

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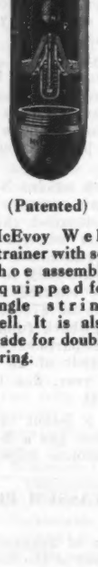

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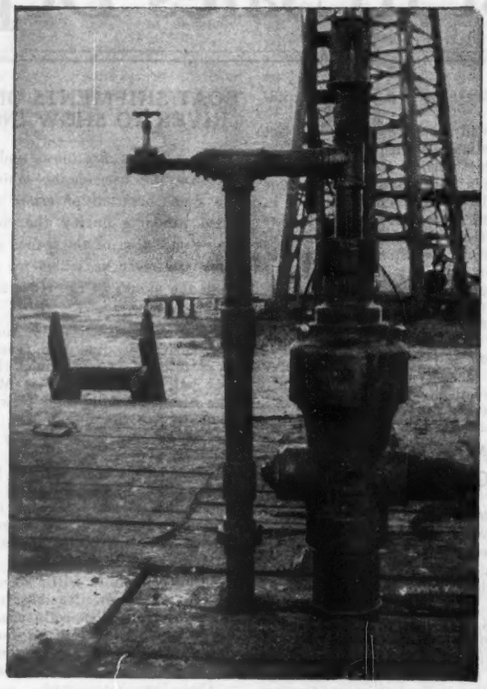
McEvoy Wireless regular coupled Joint Well Strainer.



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LA.-ARK. FIELDS

(Continued from Page 64)

centering on the common corner of Townships 19 and 20, Ranges 10 and 11 on the dividing line of East and West Carroll Parishes in which it has drilled three gas wells gauging around 50,000,000 feet each, plus four failures in the near vicinity, is starting its eighth well in the newest northeast Louisiana gas field—an area held in reserve while Richland and Monroe are being developed—No. 1-A Marston in Section 11-19-10, and has derrick up. Altogether a dozen or so wells have been drilled recently in East and West Carroll Parishes of which the Palmer Corp. has made the only three producers, all from between 2,300 and 2,350 feet.

Tunica Petroleum Co. is making a deep test of No. 52 L & A, Section 17-7-2e, in the White Sulphur district of LaSalle Parish, 20 miles southeast of Urania production where they have completed several small producers at around 800 feet, and is drilling shale at 1,497 feet. Gardner, Harter & Brown's No. 1 Winberry, Section 18-10-2e, in the Urania Pool was a salt water hole at 1,534 feet. Two wells in DeSoto Parish that have been idle for several months but still carried as "drilling" were dropped from the report as junked holes; P. J. Becker, trustee's No. 1 Tull, Section 23-12-15, at 2,475 feet and Longstreet Syndicate's No. 1 Ramsey, Section 33-13-16, at 2,802 feet. The former was a second hole that showed some gas at 1,246 feet.

Caddo Parish

In Caddo Parish Gulf Refining Co.'s No. 21-A Levee Board, Section 34-21-16, Oil City district, pumped 30 bbls. the first 12 hours from 1,835 feet and location was made for No. 22-A, same lease and section. Ohio Oil Co. abandoned derrick for No. 4 Hunter, Section 17-19-14, Dixie district. Old River Oil Corp. appears to have what may be a 150-200-bbl. pumper in No. 1 Byrd, Section 14-19-14. This location, the first "witcher location" in this territory to be a producer in this division within the knowledge of this writer, is in a peculiar geographical situation. It is located in Bossier Parish but is surrounded on all sides by land assessed in Caddo Parish—due to the idiosyncracies of Red River which wanders, like a lost soul, here and there with every freshet. But that is aside the point. Interest in it lies in the fact that it is standing 1,200 feet in oil and showing some gas from a total depth of 2,472 feet and is 1 mile east and a half-mile south of nearest production. It is being standardized and is expected to pump as stated. On the strength of it, the company is coming back and try to revamp No. 1 Sibley, a half mile west which was a failure at 2,494 feet, and Sid Onyett and others are entertaining brighter hopes for their stuff in Section 10-19-14, on which they have a 35-bbl. pumper at 2,444 feet that looked, when bailed, as if it might be one of the best wells in the pool.

Monroe District

Six completions in the Monroe district were equally divided between Morehouse and Ouachita Parishes. Rainbow Oil Co.'s derrick for No. 1 Louisville Cooperage Co., Section 32-22-8 Morehouse, was abandoned. Bahan & Bahan's No. 2 Feazel, Section 3-20-4 Morehouse, made 5,500,000 feet of gas, total depth 2,185 feet, and Southern Carbon Co.'s No. 1 United States Government, Section 13-20-4, made 3,380,000 feet, total depth 2,195 feet. In Ouachita Parish Chauvin Gas Co.'s No. 2 Slagle Johnson, Section 49-18-4, gauged 2,096,000 feet of gas from a total depth of 2,256 feet. Southern Carbon Co.'s No. 54 Fee, Section 13-19-4, was abandoned as a junked hole at 2,620 feet, and West Virginia Oil & Gas Co.'s No. 9 West Virginia Timber Co., Section 5-18-4, gauged 2,257,000 feet of gas at 1,000 pounds rock, total depth 2,205 feet.

Magnolia Petroleum Co. made another test on No. 1 McCook & Hibbler, Section 22-21-10, Cotton Valley district of Webster Parish, the deepest hole yet drilled in this division, at 6,963 feet—total depth 6,975 feet—and got 216 joints of salt water and a little gas in the 2 hours the testing tool was open. This well has been a great disappointment because it failed to produce after taking 8 feet of saturated sand in coring. Five and three-quarter-inch pipe was set for the bailing test with only 75 sacks of cement and the failure has been blamed on the small amount of cement used. However, clearance between the last string and the one preceding was so small that the company, using a quick setting cement, feared to use any more—taking into consideration pump pressure necessary on the job and the small clearance between collars on the 5¾-inch and the preceding string, figuring that the quality of the cement, the depth of the hole and the required pump pressures would combine to permit the cement—if more were used—to set before the last string could be thoroughly cemented. Operators in this district haven't had much experience in cementing deep holes, nor have cementing crews working in this territory.

Sarepta District

Pat Hudson completed No. 1 L. S. Gardner, Section 1-22-11, Sarepta district, pumping 40 bbls. net oil with lots of salt water from 2,743 feet. Sarepta—Carterville territory is coming in for plenty of attention just now through development of production found below the 3,000-foot gas horizon. Gas on a commercial scale is near the vanishing point in Carterville territory just west of the Bossier-Webster line and a well completed a month ago by Sales & Walker approximately 150 feet below the gas which made 185 bbls. initial has resulted in a dozen or so old gassers being revamped for deepening. The first of them to show positive results is Delaware-Louisiana Development Co.'s No. 5 Bollinger in Section 31-23-11, in which the "discovery" well is located, reported from one source as flowing 250 bbls. through 2-inch tubing from 2,156 feet, total depth, and from another as making 75 bbls. in the last 48 hours. At any rate, it appears Carterville is going to share to a large extent in the "new lease on life" this division is feeling as a result of the Sabine strike.

ARKANSAS

Arkansas had only one completion to report, Standard Oil Co.'s No. 9 Powell, Section 34-15-15, Ouachita County, a detail of the recent shallow sand activity in the northeast corner of Smackover proven area and a few hundred feet beyond. However, Joe Modisette and others' No. 12 Union Sawmill, Section 14-18-14, is attracting some attention. At least, one of the scouts is bemoaning his fate because a test at 2,195-2,235 feet, has prevented his going to New York for Christmas. The well, southwest of the uncertain but encouraging Lawson-Urbane district in the southeastern part of the county, tested five joints of mud and oil at this depth, cemented 6⅝-inch at 2,193 feet, and was scheduled to bail again today after drilling in, but no reports from the test had been received late in the day.

TEXAS

Three small wells in the Bethany gas district of Panola County, Texas, completed the roster. Arkansas-Louisiana Pipe Line Co.'s No. 3 Crenshaw in the E. F. Mitcheson Survey made 1,000,000 feet of gas from 2,312 feet; Magnolia Petroleum Co.'s No. 1 M. Jernigan in the Jane Thorpe Survey gauged 600,000 feet at 2,380 feet, and The Texas Company completed No. 8 Brumble, John Womack Survey as a 500,000-foot producer, total depth 2,350 feet.

MISSISSIPPI

Philp Brothers finally abandoned efforts to make any sort of a well of No. 1 James, Section 20-11-5, Yalobusha County, Mississippi, with the bottom 16 feet in black shale, and Cleye Love shut down No. 1 Mayas, Section 2-5-1e, Hinds County, at 948 feet in the Cane River series, or its corresponding formation in the Magnolia state. Humble Oil & Refining Co. is reported doing considerable leasing southwest of the old Brasfield well in Jeff Davis County. Cherokee Petroleum Co.'s No. 1 Burkett, Section 14-6-18, that claimed a show of oil in commercial quantities at 3,134 feet early in 1928 but was abandoned as a salt water hole at that depth and also in Marion County.

Crude Production

Daily average production of the pools in the area for the past week follows:

Louisiana	Bbls.
Caddo, light	10,220
Caddo, heavy	2,955
Homer	3,945
Haynesville	4,730
DeSoto-Red River	2,945
Elm Grove	540
Bellevue	620
Cotton Valley	2,360
Urania	5,480
Pleasant Hill	800
Sarepta	570
Zwolle	3,700
Total	38,865
Arkansas	
El Dorado	4,315
Smackover, light	5,730
Smackover, heavy	43,040
Stephens	1,000
Nevada County	1,140
Lisbon	1,100
Champagnolle	5,515
Bradley	85
Total	61,925
Both states	100,790
Last week	102,140
Decrease	1,350

CANADIAN FIELDS

(Continued from Page 68)

Oils with rotary tools. Of these new tests, Calmont's No. 8 has already spudded in, and is reported drilling around 100 feet. Calmont's No. 11 is rigging up, and Nos. 10 and 12 are working on derrick. This gives a total of eight tests under way on the Dallas tract.

Commonwealth Petroleums' No. 2, LSD 7, Section 9-19-2w5, has cemented casing in the Dalhousie sands preparatory to a production test of this horizon.

Vanberta Oils' No. 2, LSD 5, Section 34-18-2w5, a mile north of Merland's No. 1 producer, is reported rigging up, to spud in next week.

Central Turner Valley

In the Central Turner Valley, Section 1-20-3w5, McLeod Oil Co.'s No. 1, LSD 16, which was deepening in the lime around 3,953 feet, is reported again on production. Owing to increased gas pressure attempts to sidetrack the tools were abandoned; but will be resumed if the gas pressure subsides. The separators are recovering between 25 and 35 bbls. a day. McLeod's No. 3, normally making around 60 bbls., has been partially cut off by bridging at 15 feet off bottom. Okalta Oils' No. 1, LSD 1, is reported gradually increasing production.

Illinois-Alberta Oils' No. 2, LSD 14, Section 12-20-3w5, has shut down temporarily at 3,684 feet, owing to severe weather conditions. The test has been working with diamond drill in an exceedingly hard formation overlying the Madison limestone. This capping formation is apparently folded and thickened to a greater extent than in No. 1 which got production in the lime at 3,858 feet.

British Dominion Oil Development Corp.'s No. 2, LSD 6, same section, is drilling about 86 feet in the lime at 5,150 feet with a small increase in wet gas. New McDougall-Segur Oil Co.'s No. 4, LSD 14, is drilling in the Kootenays at 3,210 feet and preparing to run 10-inch casing; a gas flow, estimated 1,500,000 feet a day, has been struck.

North Turner Valley

Weather conditions have affected operations in North Turner Valley. Model Oils' No. 1, LSD 8, Section 22-20-3w5, just south of Foothills' No. 1 producer, is in the lower Fernies around 5,500 feet after getting a gas flow, estimated 1,000,000 feet a day, at 5,480 feet. Gas was previously struck at 5,200 feet. At 5,500 feet the drill is entering the poker chip shales overlying the lime.

Drilling in Foothills

On the High River-Aldersyde structure, south of Calgary, Ranchmen's Gas & Oil Co.'s No. 1, LSD 16, Section 13-20-29w4, is drilling in black lime at 3,800 feet with traces of gas and oil.

In the Red Coulee Field west of Coutts, Ko Top Oils' No. 1, Section 2-1-17w4, is recementing at 750 feet. Considerable gas and some oil were encountered at this depth. The location is west of Vanalta's No. 1 producer. The new Red Coulee wells are making a practice of drilling water wells inside the derrick, to offset frost conditions. Vanalta's No. 1 producer has been put on the pump, a gas engine having been installed to provide power; but road conditions interfere with trucking the production to the refinery at Coutts. On the Montana side, Monalta Oil Co.'s No. 2 Buckley reports strong oil and gas showings at 2,285 feet, indicating the well is 70 feet structurally higher than Vanalta's No. 1.

Hol-Gar Petroleum Co.'s No. 1, LSD 1, Section 11-1-17w4, is rigged up. Nordon Corp. has secured some acreage close to Vanalta's No. 1 and is reported arranging for development on a royalty basis. It is reported that the Ohio Oil Co. is negotiating for Red Coulee acreage.

Border Operations

In the Skiff Field, Dauntless Oils' No. 1, LSD 9, Section 36-6-15w4, is working to overcome caving preparatory to making a production test. This well is reported to show 30 feet of oil saturated sand in the Sunburst horizon.

On the Milk River structure, Capitol Oil & Gas Co.'s No. 1-A, LSD 16, Section 32-1-12w4, is at 2,760 feet and has entered a sand that is making considerable gas and some oil with a 2,700-foot column of water in the hole. The water comes from a point 200 feet above the sand. Commonwealth Petroleums' No. 1, LSD 9, Section 9-3-15w4, is drilling in the Madison limestone around 3,100 feet and expects to get a producing horizon between 3,400 and 3,500 feet. When this test is finished the outfit will be moved to the Blood Indian Reserve near Lethbridge where Commonwealth's No. 3 has been located in Section 23-8-23w4. Further drilling on the Milk River structure will be done with rotary tools. The company holds 18,560 acres on the Blood Reserve structure, and 11 core drill tests were put down preparatory to locating the commercial test. The company is planning later to drill a test on the Highwood structure, in the southern foothills, on acreage offsetting Warner Oils, No. 3.

In the Monarch district, Mid-Continent Oil & Refining Co. is reported rigging up for a test. Bugle Oils, LSD 12, Section 14-23-11w4, has derrick up. In the Oyen district, Fuego Oils, No. 1, Section 34-25-4w4, is shut down, owing to casing trouble. Heavy gas pressure is reported from the lower sand around 3,182 feet. Fuego's No. 2 is reported working on derrick.

Test Near Suffield

North of Suffield, Ontario Alberta Oil Corp.'s No. 1 Township 17-8w4, is at 3,259 feet with additional shows of gas and oil reported. This test reported a show of crude oil at around 3,180 feet, and had to cement off water at 3,220. The gas flow is estimated at 6,000,000 feet a day.

Official figures of Turner Valley production show a total of 867,116 bbls. of light crude oil and crude naphtha delivered from January 1 to November 30. Two wells, Home Oil Co.'s No. 1, with 168,738 bbls., and Royalite Oil Co.'s No. 4 with 110,017 bbls., have gone over the 100,000-bbl. figure. The figures show approximately 42 producing wells, including a number that yielded a small bailing production while drilling, and some others that are now being deepened. Royalite Oil Co. heads the list with 16 producing wells, not including Nos. 1 and 2, which have been abandoned.

KANSAS FIELDS

(Continued from Page 60)

No. 1 Lozier, SW cor. NW SE, Section 36-24-10, is a dry hole at 2,079 feet. The Prairie Oil & Gas Co.'s No. 1 Newhouse, NW cor. NE NE, Section 1-24-11, made 408 bbls. in 10 hours from sand 1,810-12 feet.

McPherson County

Gault Brown Oil Co. has the rig up for No. 1 Zietlow, NE cor. SE SE, Sec-

tion 7-17-1w. W. C. McBride and others made location for No. 3 Voshell, NW cor. NE NE, Section 9-21-3w, Voshell Pool. Shell Petroleum Corp. made location for No. 1 Stuckey, NE cor. SE SE, Section 9-21-3w. W. C. McBride and others' No. 2 Voshell, SE cor. NE NE, Section 9-21-3w, made 1,770 bbls. in sand 3,305-10 feet. Graham Brothers and others' No. 1 Rolander, SE cor. SW SW, Section 30-18-2w, is dry and abandoned at 1,460 feet.

Lyon County

Ritchey & Moore's No. 6 Pixlee, CSL SW, Section 34-21-10, is a rig.

Ness County

Continental Oil Co.'s No. 1 Aldrich, NE cor. SE, Section 7-18-25w, was completed for 185 bbls. in sand 4,428-31 feet.

Sedgwick County

Barnsdall Oil Co. & Graham Brothers' No. 2 Rapp, NW cor., Section 22-26-2, is a location. Fisher, Lauck and others' No. 1 Trustee, NE cor. SW SE, Section 19-27-2, made 125 bbls. in sand 2,927-38 feet.

Sumner County

Washoma Petroleum Co. and others' No. 1 Buzzard "C," NW cor. SE, Section 36-31-2, made 110 bbls. in sand 1,933-37 feet.

Russell County

Mid-West Exploration Co.'s No. 31 Benso, SW cor., Section 4-14-15w, has been completed for 140 bbls. in sand 3,-064-86 feet.

Woodson County

Hinsley and others' No. 2 Barngrover, SE cor. SW NW, Section 7-13-15, is a rig.

ROCKY MOUNTAIN AREA

(Continued from Page 68)

cor., Lot 6, Section 3-21-33, is digging cellar.

Empire Area

In the Empire area, to the east of the Lea Field, the Empire Gas & Fuel Co.'s No. 3-B State, SW NE SE, Section 5-21-35, is drilling at 4,296 feet with a hole full of water at 3,925 feet.

Buell & Hagen's No. 1 State, C NE. Section 33-11-35, in the northern part of the country in the Tatum district, is bottomed at 4,515 feet and preparing to resume, and A. D. Morton and others' No. 1 State, C NW, Section 32-11-38, is drilling at 2,260 feet in anhydrite. The Rector Oil Co.'s No. 1 King, NE NE, Section 26-25-32, southeastern part of the country, is drilling at 3,845 feet in anhydrite.

In Eddy County, the Lockhart Oil Co.'s No. 1 McAllister, C NW, Section 23-26-30, southern Artesia area, has been plugged and abandoned at a total depth of 3,820 feet at which horizon it had 2,000 feet of salt water in the hole. The top of the salt was at 1,320 feet, the base of the salt at 3,390 feet and the top of the brown lime at 3,579 feet. The elevation is 3,096 feet.

The Maljamar area, sometimes called the Caprock district, lies to the northeast of the Artesia Pool and is partly in Eddy County and partly in Lea County. The Jackson Pool, in the center of the area as here used, is in Township 17 S, and on the boundary between Ranges 30 and 31 E. Lockhart and others' No. 1 Parke, SE cor., Section 10-17-30, located 1½ miles to the northwest of No. 1 Jackson, the discovery well, apparently missed the pay and is shut down for orders at 3,567 feet. It had a good show of oil at 3,310-14 feet.

Leonard & Levers' No. 1 Levers, NW SE, Section 21-17-29, is driling at 2,720 feet, and Naylor and others' No. 2 Danciger, NW cor. SW, Section 18-17-31, is fishing at 3,270 feet. Etz Brothers' No. 1 Etz, C SE SE, Section 13-16-30, is drilling in lime at 3,410 feet with 300 feet of oil in the hole from 3,370 feet. V. P. Welch and others' No. 1 State, SW cor., Section 27-17-28, Artesia area, is drilling at 1,700 feet, and Flynn, Welch & Yates' No. 57 State, NE SE, Section 19-19-28, is driling at 700 feet. F. B. Van Horn's No. 1 Santa Fe, SE SE, Section 18-19-26, near Lakewood, is running the 12½-inch at 220 feet.

Chaves County

In Chaves County, the Starr Oil Co.'s No. 3 Adams, NE cor., Section 25-17-17, Dunken Dome, is bottomed at 3,270 feet and jarring on the underreamer. It had a hole full of water at 3,250 feet. Warman Oil Trust's No. 1 Blackdom, SE NE, Section 27-13-24, is drilling at 615 feet.

In Otero County, Samuel Butler and others' No. 1 Wingo, NE SW, Section 17-26-11, is reported indefinitely suspended at 455 feet.

In San Miguel County, the Pioneer Oil Co.'s No. 1 Montezuma, SE NW, Section 14-15-16, is drilling at 2,215 feet in lime. The top of the white lime was at 2,207 feet.

In Rio Arriba County, northwestern part of the state, the San Juan Petroleum Co.'s No. 1, Section 15-30-7w, is moving in rig.

In San Juan County, the Angel Peak Oil Co.'s No. 1 Garland, NE, Section 11-28-11, Kutz Canon district, which is being operated by the Southern Union Gas Co., is moving in a rotary rig to mud off gas, drill by tools and go on down to the Mesaverde. Total depth is 3,050 feet where it has been standing since last May when rig was destroyed by fire. A new rig was erected and fishing and sidetracking have since been in progress. The Kutz Canon Oil & Gas Co.'s No. 1 Day, SW cor., Section 20-28-10, is drilling at 1,300 feet. The Reserve Oil Co.'s No. 2 Shaffer, SE NE, Section 1-21-14, Stoney Butte, is bottomed at 780 feet and underreaming to make a water shutoff.

In McKinley County, J. W. Halsell's No. 1 Santa Fe, SW SW, Section 17-18-9w, Seven Lakes district, is drilling in the Mancos shale at 3,055 feet, and H. L. Williams' No. 1 Santa Fe, NW, Section 19-18-8, Hospah Dome, is fishing for tools at a total depth of 1,810 feet. The 15½-inch was set at 1,120 feet.

In Valencia County, the Acme Development Co.'s No. 1 Santa Fe, SW NW, Section 27-7n-4w, is bottomed in sand at 4,535 feet and underreaming the 5⅞-inch.

In Torrance County, H. L. Williams and others' No. 1 Staplin, NE cor., Section 16-8n-10e, is drilling at 1,235 feet in gravel.

COLORADO

Important wildcats drilling in Colorado are at critical stages and the precedent of bringing in one or more wells of unusual interest at Christmas may be preserved. One of these tests is the White Eagle Oil & Refining Co.'s No. 1-A Fordham, NW SW, Section 9-2s-96, on the Piceance Creek Dome in Rio Blanco County. This test is entirely in the Green River formation of Tertiary age, in which is found the oil shale beds. The Fordham well encountered a flow of about 6,000,000 feet of gas a day last October and the gas became ignited and destroyed the surface works. The rig has been rebuilt, the hole cleared and put in first class condition and the gas brought under control. The corrected tape line measurement gives total depth at 2,810 feet instead of 2,815 feet as previously reported. One other well drililng in Rio Blanco County is the Texas Production Co.'s No. 1 Potter, NE SW, Section 30-2n-96, White River structure, which is shut down at 5,587 feet for rig repairs.

Moffat County has two wildcats at interesting stages. The Texas Production Co.'s No. 1 Berlin, SW NE, Section 19-12n-100, Bartram Dome, a high on the Hiawatha Fold, is fishing for tools at 2,180 feet. At this depth a third gas horizon was encountered. Thomas McLaughlin and others' No. 1 Williams, NW SW, Section 2-3n-92, which is testing the fault block south of the Iles Dome, is drilling at 4,335 feet. At 4,-327 feet it topped a black shale definitely identified as the formation just above the objective Sundance. The black shale previously reported proved not to be the marker usually found just above the Sundance. The formations encountered in this test have thickened about 10 per cent all the way down as compared with the wells on the Iles Dome and on this basis of estimating, the Sundance is expected at around 4,380 feet.

Other Moffat County Operations

Other Moffat County operations include the following: The Midwest Refining Co.'s No. 19-SD Parkinson, SW NE, Section 24-4n-92, Iles Dome, is building derrick and the same company's No. 24 Hannewalt, NE SE SE, Section 4-6n-92, which is to wildcat the Bell Rock structure, is rigging up. The Texas Production Co.'s No. 12 Knowlton, SW SE, Section 33-5n-91, Moffat Dome, has been delayed in digging the pit on account of the frozen condition of the ground and this work still is in progress.

A rank wildcat which has been drilling since 1926 near Denver and which now is attracting attention from most of the scouts is the McDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, Arapahoe County. It is bottomed at 4,-942 feet and carrying the 6¼-inch at 4,-932 feet. The well is reported showing a little oil and some gas and this week the boilers were moved back in anticipation of any emergency. According to those in closest touch with conditions, the Dakota is expected at around 5,000 feet.

The geological information revealed by this well already is of first importance. Exact figures have not been given out but approximate figures of the company are that the Pierre shale was encountered at 1,200 feet and was bottomed at 4,000 feet. That gives a thickness of 2,800 feet. In the Repollo wells drilled in the old Boulder Field, farther to the west, the Pierre was between 5,600 and 5,700 feet thick. It generally has been believed that wells east and south of Denver might have to go 7,000 feet or more to reach the Dakota. The thinning of the beds as revealed by the No. 1 Fitzsimmons well is of more than ordinary importance and is expected to result in geological work being undertaken in this area. It has a still more important relation to the entire Denver Basin extending to the eastern boundary where numerous companies have been buying protection acreage in anticipation of results in several wildcats to be drilled the coming year.

Yuma County

In Yuma County, in northeastern Colorado near the Kansas line, the Phillips Petroleum Co.'s No. 1 Andrews, NW NW, Section 3-2s-42, is listed as among the possible Christmas surprises. This well is drilling at 4,581 feet in blue lime definitely identified as of Pennsylvanian age. The water encountered at 3,325 feet is still being carried and will be shut off as soon as a good casing seat is found.

The two operations in Jackson County are both shut down for the winter. These are the Producers & Refiners' No. 1 Hendershot, SE NE, Section 2-6n-81, Pole Mountain, which suspended for the winter at 3,610 feet and the other is the Midwest Refining Co.'s No. 21-X Rich, SW NW, Section 9-6n-80, Buffalo Creek, which shut down at 3,381 feet after cementing the 8⅝-inch on bottom.

Another operation which may appear as a completion in the Christmas stocking is the Parker Club, Inc.'s No. 1 Fee, Section 4-28-68, Badito-Alamo Dome, Huerfano County, which is driling at 3,900 feet in a dry hole in black lime and believed to be less than 50 feet off the objective Dakota sand.

Fremont County

In Fremont County, the Boulder Oil Co.'s No. 1 Potts, NE NW, Section 17-19-69, south Florence district, was dry and abandoned at 2,100 feet. Two new operations are getting under way. The Continental Oil Co.'s No. 2 Harding, NE SW, Section 21-18-70, which is to explore the Orchard Park area north of Canon City, is moving in for a 3,000-foot test. This is a joint operation with the Canon Heights Oil Co. M. L. Eno's No. 2 Griffith, NW NE, Section 5-20-69, has commenced spudding. The Waterville Oil Co.'s No. 1 State, SE NW, Section 16-18-69, a Pennsylvanian test north of the Florence Pool, is driling at 700 feet. The Continental Oil Co.'s No. 1 Giovanna, SW NW, Section 1-19-70, Canon City district, is drilling at 2,080 feet, and its No. 2 Empire Zinc, SE NW, Section 8-19-70, is drilling at 1,055 feet.

In Bent County, the Continental Oil Co.'s No. 1 Pipe Springs, NE SE, Section 27-27-49, is drilling at 5,170 feet with the water apparently shut off with the 5-inch casing though the latter has not been cemented.

The Helium Co.'s No. 1 Hall, SE SW, Section 19-27-59, Delhi Dome, Las Animas County, is drilling at 375 feet.

In Larimer County, the Continental Oil Co.'s No. 4 Scott, NE SE, Section 6-9n-68, Wellington Dome, is bottomed in the Muddy sand at 4,410 feet, but has not been tested. The oil stands 1,000 feet in the hole. No. 5 Scott, NE NW, Section 6-9-68, is rigging up.

IDAHO

The California Co.'s No. 1 Sorenson, NW SW, Section 33-3n-41, Meadow Creek structure, Bonneville County, Idaho, is making new hole for the first time in several months and is drilling at 3,-584 feet. Trouble was encountered when the tools went into a crevice. The formation is reported to be the Embar. The Grand Teton Oil Co.'s No. 1 Blevins, SW, Section 33-5n-44, Horseshoe structure, Teton County, is drilling at 1,665 feet and will lower the 10-inch to shut off a 3-foot water sand. The identity of the formation in which the hole is bottomed is not clearly established but it is believed to be either a thin stratum of the Aspen formation or a thicker part of the Frontier.

The Monida Oil Co.'s No. 1 Rose, NE, Section 32-14-36, Beaver Dome, Clark County, is fishing for tools at 800 feet. The tools were left on bottom about two weeks ago when boiler trouble developed. A new boiler was brought in by express. When an attempt was made to pull the tools it was found that the hole had caved around them and the cable broke in trying to extract them.

UTAH

The Midwest Refining Co.'s No. 31 Pary, Section 14-39-1w, Butler Valley Dome in Kane County, Utah, being drilled for the Utah Oil Refining Co., is making hole at 690 feet in a buff-colored sand. The Continental Oil Co.'s No. 1 Boundary Butte, Section 22-43-22, San Juan County, is still cleaning out and lowering the 3¾-inch casing to bottom at 5,570 feet. The Maude Ellen Oil Co.'s No. 1, Section 28-3s-21, Uinta County, is drilling at 1,785 feet, and the Diamond Oil Co.'s No. 4, Section 16-8s-5e, Utah County, is drilling below 1,4000 feet after making a water shutoff with the 8¼-inch.

WYOMING

The test to the granite in the Salt Creek Field which is being drilled by the Midwest Refining Co. in its No. 29-DT, NW, Section 35-40-79, on Wyoming Associated lease, has cemented off the flow of oil in the third Sundance at 2,872 feet and is redrilling at 2,655 feet. The well made 2,117 bbls. in 24 hours, but if it had been allowed to clean itself thoroughly, it probably would have done much better.

Operations in Natrona County outside of Salt Creek include the following: The All-States Oil Co.'s No. 3, SE cor., Section 36-37-82, North Casper Creek Dome, cemented the pipe at 3,072 feet and is drilling ahead. Dorsey E. Straitiff and others' No. 1 Big Horn Sheep, NW NE NE, Section 10-37-85, Notches Dome, is to be drilled to the Madison lime which has never been tested in that area. This well, drilled in 1925 by the Marland Oil Co., found oil in the Embar-Tensleep horizons at 2,755-75 feet, swabbing 150 bbls. in 6 hours. It was then deepened and ran into water. After plugging back to 2,785 feet it was put on the pump. The Straitiff interests acquired the well and it has been producing around 100 bbls. a day.

The Mule Creek Field in Niobrara County has been shut down for the winter and the Argo Oil Co.'s No. 7 Wehopeso, SW NW, Section 19-38-60, a deep test to horizons heretofore unexplored in that field, also has suspended for the winter. The latter had water in the Sundance and also in the top of the

Embar at 2,650 feet. Total depth is 2,690 feet. The Ohio Oil Co.'s No. 1 Converse Sheep, Section 32-36-65, Lance Creek Field, a former producer in the Muddy sand, is being deepened to test lower horizons and is drilling at 2,950 feet.

Park County

In Park County, the Ohio Oil Co.'s No. 1 Burlington, Section 21-53-101, Shoshone Dome, is drilling at 4,205 feet. The Midwest Refining Co.'s No. 31 Rosenberg, 220 feet each way out of the SW cor. NE, Section 25-58-98, Frannie Dome, is spudding at 82 feet. This is being drilled for the Frannie Oil Co. (Kirk-Peters interests) and is an offset on the east to No. 36 Rosenberg which made 2,424 bbls. first 24 hours from the Madison lime. In the Oregon Basin Field, the Texas Production Co. is having a unit of a treating plant installed by the Petroleum Rectifying Co.

The Texas Company's No. 1 Sonners, NW cor., Section 29-51-100, is drilling at 3,489 feet. Charles E. Orchard's No. 1 Owens, SE cor., Section 29-52-100, is standing cemented at 3,560 feet, and his No. 7 Rue, SW cor. NW, Section 28-51-100, is standing ready to drill in at 3,570 feet. His No. 1 Atherly, SW cor., Section 33-52-100, is bottomed at 2,210 feet and underreaming, and his No. 2 Frisby, SE NW, Section 32-52-100, is building rig. The Oneida Oil Co.'s No. 1 Beck, SW cor., Section 28-52-100, is fishing for bit at 2,120 feet, and the Cody Petroleum Co.'s No. 1-B Klindt, NE SW, Section 6-51-100, is drilling at 1,225 feet. The California-Wyoming Oil Co.'s No. 1 Null, Section 26-51-100, is shut down at 500 feet, and the Y-Tex Oil Co.'s No. 1, Section 16-51-100, lost its hole at 1,115 feet and is skidding rig.

Big Horn County

In Big Horn County, the Producers & Refiners' No. 3, NW NW, Section 24-56-98, Garland Dome, is bottomed at 4,234 feet and killing a flow of 8,000,000 feet of gas to fish out the tools. The Ohio Oil Co.'s No. 1 Union Gas, NE cor., Section 22-56-97, Byron Dome, is fishing for bit at 4,490 feet.

In Hot Springs County, the Midwest Refining Co.'s No. 8 Wagonhound, NW SE, Section 6-44-98, is shut down at 1,540 feet while drilling a water well. The Ohio Oil Co.'s No. 1 Smith, Section 9-46-99, Walker Dome, is driling at 2,800 feet.

The Texas Production Co.'s No. 1 State, SW SW, Section 36-34-95, Alkali Butte, has overcome its crooked hole and cemented the 15½-inch at 722 feet. The Producers & Refiners' No. 9, SW SW, Section 15-32-95, Big Sand Draw, which is bottomed at 2,978 feet on top of the Fourth Wall Creek, is tearing down tools.

In Carbon County, the Producers & Refiners' No. 2, SE NW, Section 34-26-88, Mahoney Dome, is bottomed at 4,328 feet and installing cable tools. A show of oil is reported at the bottom of the hole. This is presumed to be coming from the top of either the Embar or Tensleep. Mahoney Dome has been producing gas for some time from the Dakota and Sundance and this operation was started as a test to the deeper horizons.

Earlier Test Ran Into Water

Two years ago this company drilled a deep test farther to the east on the Ferris Dome and encountered oil in approximately the same horizon only to run into water at a lower depth. The oil in this well was light and of a paraffin base and entirely different from the black oil found in the Pennsylvanian horizons in the northern part of the state. The Midwest Refining Co.'s No. 31 Dutton Creek, SW cor. SE, Section 1-18-78, is drilling at 3,000 feet in gray shale.

In Sweetwater County, the Mountain Fuel Supply Co.'s No. 1 Cappers, SW NE, Section 2-19-104, North Baxter Basin, is drilling at 2,394 feet and its No. 1 Union Pacific, Section 13-19-104, is drilling at 2,160 feet. Its No. 1 Sullivan, SW SW, Section 10-16-104, South Baxter Basin, is bottomed below 2,775 feet and jarring on the frozen 8⅝-inch.

In Lincoln County, the Mountain Oil Corp.'s No. 1 State, Lot 1, Section 36-25½-115, is spudding at 48 feet. The Midwest Refining Co.'s No. 1 Little Grays River, SE SE, Section 25-37-117, is mudding casing at 1,720 feet.

In Uinta County, the California Co.'s No. 1 Union Pacific, NE NW, Section 7-17-116, is bottomed at 4,597 feet and redrilling at 4,595 feet.

Pipe Line Runs

Daily average production for week ending December 21:

WYOMING	
Salt Creek	32,110
Frannie	680
Big Muddy	2,130
Oregon Basin	3,620
Dutton	30
Elk Basin	710
Ferris	40
Grass Creek	2,100
Greybull	10
Hamilton	930
LaBarge	2,340
Lance Creek	160
Lost Soldier	3,100
Osage	610
Poison Spider	1,160
Rock River	2,160
Rex Lake	100
Lander	440
Simpson Ridge	60
Teapot Dome	40
Mule Creek	....
Total	52,530
MONTANA	
Cat Creek	1,250
Kevin-Sunburst	6,800
Pondera	2,360
Lake Basin	70
Total	10,480
COLORADO	
Moffat	1,143
Fort Collins	1,778
Florence	694
Iles	1,126
Tow Creek	581
Boulder	25
Rangley	100
Total	5,447
NEW MEXICO	
Artesia	746
Cap Rock (Maljamar)	918
Hogback	410
Rattlesnake	1,286
Table Mesa	115
Jal	....
Hobbs High	....
Total	3,475
Grand total	71,932

MONTANA

A further extension of the Pondera Field in northern Montana was reported this week when the Midwest Refining Co. brought in its No. 3 Jones on Section 17-27-4. The well is located farther west than any other producer in the field, and the first 24 hours' production gauged 285 bbls. This is better than the average production for a Pondera well, and makes the west edge of the field look still more promising. The Pondera Field was recently extended to the north by the Jewel Oil Co. completion.

An interesting test will be started soon by a new company organized under the name of the Transcontinental Oil Co. The well will be located near the town of Eureka in the northwestern part of the State, on the west slope of the Rocky Mountains. This will be the first test to be drilled in this part of the State.

The D. A. MacDonald well, on the Buckley Dome, offsetting the Vanalta well but located on the Montana side of the national boundary, is drilling below 2,200 feet and should pick up the sand in about 300 feet. The Monalta Oil Co.'s well, which was delayed by drilling troubles, is drilling below 2,300 feet, and the Cosmos Petroleum's test has passed 1,775 feet. The tests are expected to show commercial production as all are located within a few hundred feet of the Vanalta discovery well.

A number of outlying wells have been forced to shut down on account of the severe weather, and will have nothing more to report until spring. The Oregon Flatwillow Oil Co. has suspended drilling for the winter on the Flatwillow structure, the Jones Oil Co. has shut down on the Brown's Coulee structure, and the Andover Oil Co. has stopped work on its newly spudded test on the Choteau Dome in Teton County.

Cat Creek Field

In the Cat Creek Field, the Arro Oil & Refining Co. has started the new air plant installed in that field recently. The injection of air into the Kootenai sands of the Cat Creek Field seems to be a success from the start for some of the wells have gained considerably in production since the plant started pushing air down the key wells.

The greatest increase was in a well that was doing about 15 bbls. daily. This well is now making 85 bbls. and as the pressure reaches other wells, a similar increase in production is expected. The Cat Creek Field never had any gas production. The discovery well and other wells of the early history of the field flowed by rock pressure alone. A valve on the top of the casing controlled the production in those times and with limited storage for the crude, the oil was run to tankage as the storage facilities permitted. The experiment of placing air pressure upon the oil sands was therefore watched with interest.

In the Sunburst Field, the Johnson Syndicate well on Section 17-34-1, found the Ellis dry and the well is being drilled deeper to test the Madison stray. The Queen City Oil Co. drilled in an average producer on Section 5-34-2. This well is showing a lot of water and a little oil, but may do better when the water is exhausted. Snow and cold weather has shut down nearly all the active drilling wells in northern Montana.

INTERESTING MEETING FOR GEOLOGISTS SEEN

Arrangements already made for the fifteenth annual meeting of the American Association of Petroleum Geologists, to be held in New Orleans, La., March 20-22, 1930, indicate that the three days will lack nothing in point of interest for the visitors. The general arrangements are in charge of J. Y. Snyder, president, City Bank Building, New Orleans; Fred H. Kay, first vice president; A. R. Denison, second vice president; F. H. Lahee, third vice president, and R. S. McFarland, past president.

Mr. Lahee is in charge of the technical program, which will include Gulf Coast, geophysical, crooked hole and foreign papers. George R. Stevens is chairman of the "Stunt Night on the Mighty Mississippi." Special sightseeing trips will be supervised by R. A. Steinmayer of Tulane University, New Orleans, and a tour through the historic "Evangeline" country will be directed by a committee headed by J. S. Ivy of Shreveport. There will be a golf tournament for the Bostick trophy. Mrs. S. P. Borden of Shreveport is general chairman, and Mrs. R. A. Steinmayer of New Orleans, local chairman, of arrangements for the entertainment of ladies, for whom there will be bridge, a luncheon, a sightseeing trip on the steamer "Capitol," and a trip through Vieux Carre.

The technical sessions will be held in the Tip-Top Inn and a buffet dance will be held there Friday night, March 21. No entertainment is scheduled for Saturday, the closing day, in order to permit delegates to follow their own inclinations. A special trips committee will suggest points of interest to visit.

The Association has 2,300 members and it is the largest organized body of geologists in the world. The attendance at the last annual meeting in Fort Worth, Tex., was approximately 2,000. J. H. D. Hull, Tulsa, is business manager.

DEMAND FOR LIQUEFIED GASES HAS EXPANSION

(Continued from Page 46)

G-6 and G-7 are finding outlets in the commercial solvent field.

In order that the buyers may have complete data regarding the properties of these four products, the Philfuels Co. has prepared the data given in Table 1. This table shows the vapor pressure, distillation range, gravity, volume per pound and gallon, limits of inflammability, heating value and other data pertinent to their manufacture and utilization.

In the development of these products it is apparent that the Philfuels Co. has done a great deal of pioneer work not only in perfecting manufacturing methods but also in transportation and marketing. The more volatile of these products must be kept under pressure from the plant to the point of consumption. Suitable pressure storage tanks have been developed and tank cars and cylinders of special design have been built for transporting the liquefied gases from the plants to customers. Co-operative work has been carried on with the Bureau of Explosives, Bureau of Mines, Bureau of Standards and Underwriters Laboratories in order to assure safety in all phases of operation.

In order to aid customers in handling the products, the Philfuels Co. has prepared booklets giving all the necessary information. This includes information covering installation methods, transportation requirements and detailed data on costs.

The company maintains a large research department and engineering staff which is constantly studying and solving the problems which always confront a new manufacturing process and a new market. Certain investigations are now under way which, it is expected, will contribute materially to the further advancement of the Philfuels program of expansion.

Domestic Fuel

The G-3, or domestic fuel, of the Philfuels Co. bearing the trade name of "Philgas" is a commercially pure propane which, as shown in the table, has a —45° F. initial boiling point and a —40° F. final boiling point. This boiling range assures that the liquid will readily vaporize when released regardless of atmospheric conditions. This product is being sold to domestic users in towns and suburban sections which at present do not have either natural or artificial gas available.

Various methods are used by Philfuels Co. and other companies in handling the distribution of these gases to the domestic consumers. Philfuels Co. now sells large quantities in tank car or cylinder shipments to buyers who have their own retail distributing plan.

Retail Distribution

In regard to its own retail distribution Philfuels Co. has worked out a plan which is unique in several respects. The company at present has 14 of these retail units located in Middle Western and Eastern states. The locations of these distributing units, which were preceded by careful surveys covering market conditions, are near the following cities: Detroit, Mich.; Indianapolis, Ind.; Madison, Wis.; Cleveland, Ohio; New York City; Washington, D. C.; Baltimore, Md.; Boston, Mass.; Bridgeport, Conn.; Providence, R. I.; Windsor, Conn., and Albany, N. Y. Three of the units are near New York City.

A distributing station is established at a central point for each unit. Each station contains the necessary equipment and adequate pressure tanks to store and handle the Philgas. The retail distribution is carried on by specially designed tank trucks.

A cylinder with a capacity of approximately 100 pounds is installed at the consuming point. The company checks the quantity of liquid Philgas in the consumer's cylinder to insure the supply being adequate at all times. The fuel supply is periodically replenished without attention on the part of the customer by means of a hose connection between the tank truck and the customer's container.

The quantity consumed is determined by weight and the consumer is billed monthly in the same manner that a gas company with a pipe line distributing system bills its customers. The average home using the liquefied gas for cooking will consume around 50 pounds a month, so that one delivery a month is sufficient when a 100-pound cylinder is installed. A service charge of $36.50 is made at the time the installation is made.

Under the present plan, tank truck deliveries are made within a radius of 25 miles from the distributing station. The condition of the roads in the rural sections and small communities within this radius is an important factor in determining the feasibility of this method of distribution.

Experience has shown that this method

of taking care of the retail trade, corresponding to that used by all public utilities, has proved most attractive to the customers and is also economical from the standpoint of the distributing company.

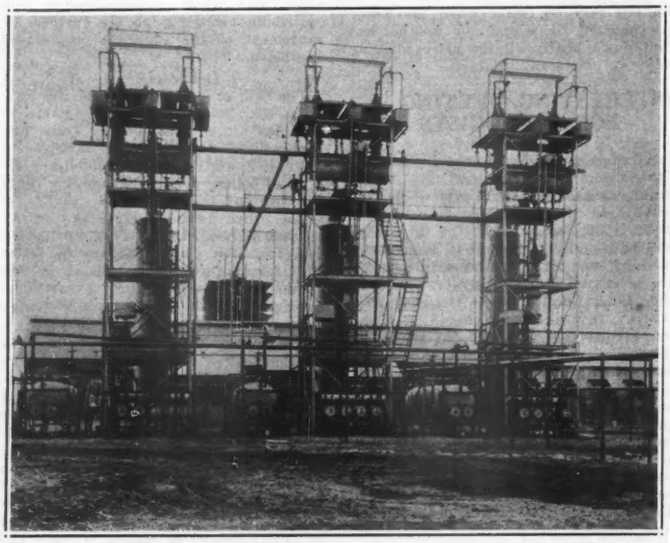
Industrial Gas

G-4 industrial fuel, sold under the trade name Philfuel, is used for several purposes. The boiling range of the butanes is higher, the vapor pressure less and the B. t. u. content greater than the liquefied propane. It can be blended with propane and this is done in some cases.

The industrial gas is being sold as fuel to industrial consumers who require a large volume of gas fuel of uniform specifications. Metal processing industries, glass manufacturers, etc., are among the buyers of this fuel.

Gas Carburetion

One of the most important uses of G-4 at this time comes from the artificial gas industries, where the product is used for gas enrichment. In this use the liquefied gas takes the place of gas oil obtained from refiners to carburet producer gas, blue water gas and other gases of low B. t. u. content.



View of plant of Phillips Petroleum Co. located in the Burbank Field of Oklahoma. Plant manufactures liquefied gas products as well as regular grades of natural gasoline.

Special attention has been paid to this large potential market for liquefied gases. Despite the fact that gas oil prices have been relatively low over the past two years, the results obtained at representative plants show that G-4 can compete on a basis of present prices.

As a result of an investigation conducted by a large artificial gas company at Davenport, Iowa, the following conclusions were reached in regard to the use of G-4:

"1. At the present extremely low gas oil price levels, G-4 (commercial butanes) seem, on the basis of the data at present available, competitive at a common price per gallon for water gas enrichment.

"2. The new enricher will become of proportionately greater worth to the industry as the general price structure of enricher materials increases.

"3. Satisfactory and practical mechanical means for handling, mixing and controlling liquefied petroleum gases in gas plants have been worked out and are available to the industry.

"4. The competitive nature and large available quantities of liquefied gases suitable for replacement of manufactured gas in large industrial uses creates a situation that can perhaps be solved only by the increasing use of these fuels by the gas utilities as enriching mediums, and in the complete manufacture of gas at properties having low send-outs."

For Peak Loads

In connection with the operation of artificial gas plants, it has been found that G-4 has possibilities in meeting peak load demands. Many gas utility companies have brief periods during the year in which they are required to supply gas in quantities greatly in excess of average conditions. The installation of the usual type equipment to supply the peak conditions is expensive and the investment involved is often not justified by the additional revenue.

The storage of sufficient quantities of G-4 offers an economical method of solving this problem. Air or other gas of low calorific value can be carbureted with G-4 to furnish a large volume immediately available. Where water gas is used the generator capacity can be enlarged by increasing the amount of the blow run. The gas can then be enriched with G-4 from storage.

An installation representative of this peak load application has been made at a gas plant in Louisville.

Direct Gas Manufacture

In addition to its use for gas enrichment, installations have shown that it is feasible to use Philfuels directly in the manufacture of gas. It is possible that in time this will develop into the largest single outlet for liquefied gases. At this time it appears to the Philfuels management that this departure in gas manufacture is feasible in smaller towns which are not at present being supplied with gas. It is stated that there are over 200 cities in the United States with a population in excess of 5,000 people which do not have gas distributing systems.

In this method of operation the G-4 is mixed with air or any one of a large number of gases. The latter include blue water gas, and producer gas previously mentioned in connection with gas enrichment or flue gases. The Philfuels Co. has made a detailed investigation regarding the practicability of this problem, both from the manufacturing and marketing angle. Experience has indicated that a satisfactory gas can be supplied at a price which will not be prohibitive from the consuming end. For plants of small capacity the investment is relatively small.

Installations of this type have been made at Sheridan, Ind.; Lenton, Ind., and Cales, Me. All three towns have small pipe line distributing systems. The equipment used in mixing the butane and air operates automatically so that very little labor is required. In units of this type where the volume of gas required is relatively small the cost is substantially less than where artificial gas plants are installed.

Market for Products

It is estimated that approximately 14,000,000 gallons of liquefied gases of various types were manufactured and sold in the United States in 1929. This was an increase of 100 per cent over the volume in 1928.

No accurate prediction can be made regarding future expansion, although it is apparent that the potential market has just been scratched. It is believed that the demand in 1930 will be at least double that of the year just closing.

CONTINUAL SWABBING PROHIBITED IN MICHIGAN

MUSKEGON, Mich., Dec. 23.—Continual swabbing of oil wells to increase their production of oil and gas is prohibited in Michigan under a new ruling issued by George R. Hogarth, supervisor of wells and chairman of the state conservation commission.

The State contends that continual swabbing of wells puts a vacuum on the oil pay sands, will hasten the exhaustion of oil and gas and will increase the speed with which water will come in thereby reducing the economic life of the formations.

The order was issued "to conserve and protect the oil and gas producing formations of the State in accordance with the provisions of Act No. 15 of the Public Acts of 1929." It prohibits the use of casing swabs or other like devices for lifting oil by means of wire cables or suction tools.

Two exceptions to the rule are provided in the order. They are: First, when swabbing is necessary to bring in or stimulate the production of a well; and second, when testing or cleaning out a well. In order to prevent infringements of the rule operators may not swab a well continually for more than 10 days without written permission from the supervisor of wells.

The use of casing swabs by a number of operators in the Muskegon Field resulted in issuance of the order. The order applies not only to the Muskegon Field, however, but also to Saginaw and Mount Pleasant Fields.

ADOPT NEW SPECIFIC GRAVITY BALANCE

(Continued from Page 54)

support free from vibration, in such position that the balance scale may be read with accuracy. In the absence of any other convenient supporting base a tripod should be used for mounting the balance.

6. Hose and Valves—All hose used shall be of the thick-wall rubber, pressure-vacuum type and free of any leak.

Only needle valves shall be used on the hose lines. In making the test, it is essential that, as the required pressure is approached, it can be gradually and easily increased or decreased, and the valves must permit of such adjustments.

7. Thermometer — The chamber shall be provided with a quarter-inch opening (sealed ordinarily with a plug or a valve), into which may be secured and tightly fitted, as required, a thermometer for determining gas temperatures within the chamber.

B.—Test Procedure

1. All hoses or connections required for the test shall be connected before the test is actually started and the balance shall then be securely mounted and leveled. This precaution must be taken to eliminate, after the test has started, disturbances tending to jar the apparatus and thus introduce errors because of indeterminate changes in the position of the beam.

2. The beam weights shall now be adjusted by trial so that the beam will balance in air at a pressure not greater than atmospheric and in the gas at a pressure not greater than the pressure on the line from which the gas sample is obtained. The utmost care must be taken in adjusting the beam weights. The beam must be secured by the locking device when such adjustments are made so that the beam suspension may in no way be strained or damaged. See that the weights and nuts are tight.

3. The gas chamber and all connections shall now be evacuated to an absolute pressure of not more than 130 mm. of mercury (approximately 600 mm. vacuum), by means of a vacuum pump and with all hose connections closed, the apparatus shall be tested for leakage. Any exact absolute pressure of not more than 130 mm. of mercury shall be maintained, with the apparatus undisturbed, for an interval of not less than two minutes, before the system is adjudged without leaks.

4. The balance shall be evacuated and air allowed to enter at least three times before observing the balance pressure for air. To purge the apparatus the procedure of evacuation by means of a vacuum pump shall be adopted. For each evacuation, the absolute pressure in the balance shall be reduced to within 130 mm. of mercury and the air or gas, as the case may be, shall be allowed to enter at its own pressure. The balance point shall be obtained by operating the valves and not the pump. Sudden surges of air (or gas, when obtaining the balance point in gas) must be avoided. The increase of pressures should be in increments of not more than 0.50 mm. in each arm of the manometer when operating near the balance point. Before reading, the manometer should be lightly tapped with the finger at the mercury surfaces to eliminate mercury sticking to the glass. Record the pressure on the balance, as determined from the manometer, as the balance point for air. Make a check determination to obtain a second reading of the balance pressure. The barometric pressure should be observed and recorded at this time. All barometric readings shall be made with the barometer at rest in the same position throughout the test.

5. Similarly, the balance shall be evacuated and gas allowed to enter at least three times before the balance pressure of the gas is obtained. The manipulations described above in Paragraph 4 shall be repeated for obtaining the balance point in gas. Two determinations of the gas-balancing pressure shall be made.

6. Finally, before dismantling the apparatus, the balance shall be purged a third time by evacuation, as instructed in Paragraph 4, for air, and the balance pressure in air again obtained and recorded. The barometric pressure shall again be observed at this time.

7. See that the beam mechanism is secured by the locking device after the test is completed.

C. Notes

1. The accuracy of the test shall be such that check determinations of the gas specific gravity will agree within two units in the second decimal place for wet gases, or gases having a specific gravity greater than 0.75, and within four units in the third decimal place for dry gases, or gases having a specific gravity less than 0.75.

2. Where accuracies expressed in the third decimal place are required, the use of a calcium chloride dryer in the air-suction line to the balance is recommended on warm days when the humidity is high.

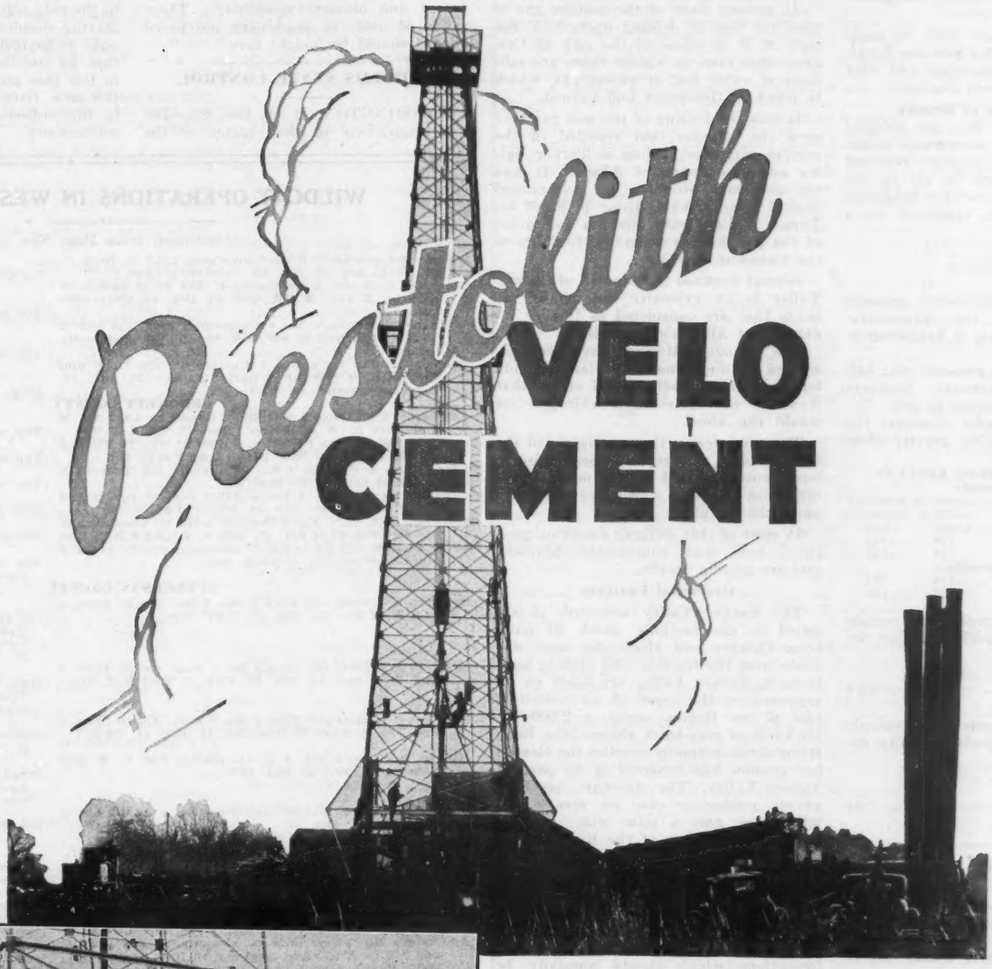
3. Should any limitation of procedure herein incorporated be impractical or impossible because of any extraordinary conditions encountered, the parties cooperating in a test may agree to modify such limitations.

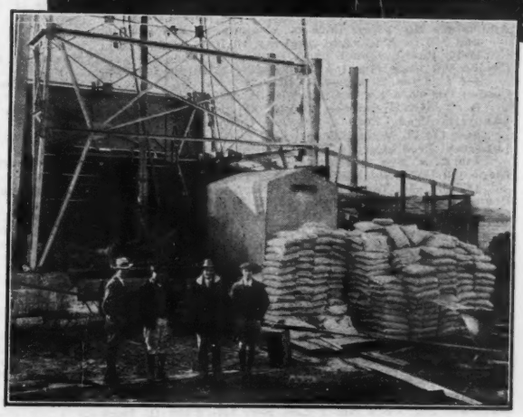
D. Precautions to Be Taken for Test

1. The temperature of the balance should be kept constant during the test. Wherever possible, it is recommended the apparatus be shaded from heat or wind or other weather disturbances. Special precautions should be taken to avoid errors resulting from the use of a balance of which the temperature is not in equilibrium with that of the surrounding atmosphere. Reference is made in particular to extreme changes in conditions, such as in removing a balance, shaded in transit, to bright sunlight for the test without allowance for equilibrium temperatures to be reached.

2. Manometers and mercury shall be kept clean so as to permit accurate readings.

3. Condensation in the balance should be avoided. Small drops of liquid on the





S. Bright No. 5. Prestolith Velo Cement used. Halliburton Process

ask the men in the field!

Prestolith Velo 24-hour cement is an improved Portland cement which meets all the exacting requirements of speed, high strength, plasticity, water tightness, durability, and safety imposed on it by the oil trade.

The S. Bright No. 5, Sedgwick County, Kan., owned by L. H. Wentz, is one of the many wells where Prestolith Velo has meant a considerable savings to the owners.

Write for complete information.

MISSOURI PORTLAND CEMENT CO.

ST. LOUIS KANSAS CITY MEMPHIS

Manufacturers of "Red Ring" Portland Cement and "Prestolith" brand of Velo Cement. Producers of sand, gravel and Bethany Falls crushed stone.

beam or float will give rise to large errors in the determinations.

4. Serious errors may result from readings taken with the balance beam at rest. This is especially true if there is any degree of friction in the operation of the balance. A travel range of from 6 to 16 divisions on the beam scale shall be maintained at the time readings are made.

5. All scale readings shall be made while the operator is in a position directly in front of the apparatus and with the level of the eyes held constant.

E. Calculation of Results

The specific gravity of a gas referred to air as unity may be represented as the ratio of the absolute pressure required for balancing the beam in air to the absolute pressure required for balancing the beam in the gas, expressed as a formula:

$$\text{Specific Gravity} = \frac{A}{G}$$

Where A = the manometer pressure plus (algebraically) the barometric pressure while the beam is balancing in air.

G = the manometer pressure plus (algebraically) the barometric pressure while the beam is balancing in gas.

The following examples illustrate the calculation of gas specific gravity from assumed test data:

ASSUMPTION OF TEST RESULTS

First Example

	Manometer pressure (mm.)	Barometer reading (mm.)	Absolute pressure (mm.)
Gas No. 1 (G_1).	*—91	736	645
Air No. 1 (A_1).	—1.0	736	735

Second Example

Gas No. 2 (G_2).	+74	736	810
Air No. 2 (A_2).	*—101	736	635

*Vacuum.

From the first example, gas sample No. 1 would have a specific gravity determined as follows:

$$\text{Specific gravity} = \frac{A_1}{G_1} = \frac{800}{700} = 1.14$$

From the second example, gas sample No. 2 would have a specific gravity determined as follows:

$$\text{Specific gravity} = \frac{A_2}{G_2} = \frac{635}{810} = .784$$

MANY PROBLEMS IN CANADIAN OIL FIELDS

(Continued from Page 47)

be cemented from top to bottom inside the 8¼ which would give double assurance against damage by pressure or temperature. It was felt that this was quite expensive but might be justifiable when considered as protection for the heavy investment already made to find the wet gas. But at present a procedure is being tried out of cementing the lower part of the 6⅝ up into the 8¼ but putting oil ahead of the cement to force out the rotary mud above the cement, thus leaving a nonfreezable fluid behind the casing. As the oil would be between two strings of casing it would not dissipate into upper formations.

This procedure, however, presents other difficulties for in order to put the oil in the casing ahead of the cement the oil must replace and force out of the hole a fluid that is more than twice as heavy. This means that before cement is started in the hole a pump pressure must actually be built up between 1,000 and 1,500 pounds to force the oil in. It also means that the cement must be pumped and started in the casing against that pressure. As cement is an abrasive this pumping under high pressure is hard on pumping equipment.

There are two reasons why the Turner Valley wet gas wells have not been shut in. The first is because attempts already made to shut in some of the wells have been unsuccessful; the second reason is that the wells must be left open in order to get the daily production of naphtha from the separators. It is recognized by the operators, however, that wells should be finished so they could be shut in if necessary.

Residue Gas

What to do with the residue gas from the separators in Turner Valley is an important problem. A joint committee of the Dominion and provincial governments is investigating the possibilities of useful disposition of the excess gas, which is difficult because of the great distances from Turner Valley to cities of any size. The importance of the problem increases as new wells are brought in.

At present part of the residue gas is used for fuel in drilling operations and part of it is piped to the city of Calgary. But even in winter there are millions of cubic feet of excess gas, which is piped to flambeaus and burned.

It was the finding of the wet gas that gave the impetus that resulted in the present extensive drilling in Turner Valley and other parts of Alberta. It was the necessary stimulus for substantial capital commitments. Hope is based on Turner Valley being just an indication of the possibilities along the foothills of the Canadian Rockies.

Several hundred miles north of Turner Valley is an extensive outcrop of tar sands that are considered as further indication of Alberta's possibilities.

The Canadian Rockies have been described as the spine of western Canada but they are so sadly out of center that it seems the cleverest of chiropractors would run afoul.

The same forces that so disjointed the mountains in a large way appear also to have broken up and faulted many of the otherwise favorable subsurface structures along the foothills.

In spite of that difficult condition geologists have made considerable headway and are getting results.

Geological Features

The Turner Valley structure is situated in the foothills about 40 miles from Calgary and about the same distance from the Rockies. All drilling locations in Turner Valley are made on an exposure of the crest of an anticlinal fold of the Benton series, a 2,000-foot thickness of gray-black shales. The Belly River series normally overlies the Benton but erosion has removed it in part of Turner Valley. The structure has been proven productive over an area of 11 miles long and a mile wide, running parallel to the axis of the Rockies in a northwest direction.

On another structure west of Turner Valley a test well was started on another exposure of the Benton series but after penetrating some distance they began to get what looked like Belly River formations which should normally be above the Benton. But the formations changed again to the Benton and they proceeded with some confidence.

In the flat prairies east of the foothills in Alberta the shallow formations are soft deposits. Glacial drift is said to have played a hand in the prairies. Erosions along creek banks aid considerably in finding subsurface structures and in some areas a shallow coal stratum is structurally traced by core drilling.

The Hudson's Bay Oil & Gas Co., under the management of R. Van A. Mills, who is well known to all Oil and Gas Journal readers, is undertaking an extensive development program throughout Alberta, mostly on the lands of the Hudson's Bay Co., which has been a very important factor in Canada for several hundred years.

In the development of Turner Valley the Imperial Oil Co. is the leading factor, operating through several subsidiary companies, under the management of J. H. McLeod and field supervision of Ray Armstrong, W. S. Applegate and H. H. Head.

Many small operators and the public in general have pitched in generously and made possible considerable progress.

Though Canada's total production is comparatively small at this time, Turner Valley is sufficiently important to call attention to Alberta's possibilities.

MACHINERY LIBRARY FOUNDED

The largest and most complete machinery library in America if not the world, providing information concerning the machinery in use in all industries, will be established at MacDonald Brothers Engineering Laboratories, Inc., Detroit, Mich., according to an announcement by H. E. MacDonald, vice president and general manager. "Such a library," said Mr. MacDonald, "will help to reduce the loss of millions of dollars annually through the purchase of inefficient and obsolete machinery. Thousands of units of machinery purchased abroad should be bought here."

UPHOLDS STATE CONTROL

WASHINGTON, D. C., Dec. 23.—Despite provisions in the charter of the Maysville Gas Co. of Kentucky, which gave it power to furnish service on such terms as the company and the customers may agree upon, the District Court for the eastern district of Kentucky, has construed the law as conferring on the utility only the right to make valid an enforcible contract with its customers as to rates to be charged subject, however, to the rate regulatory power of the State. Having decided that the State had the right to control the price, the court added that its conclusion leaves to be litigated in this case only the question of whether the rate fixed by the common council in the ordinance of April 15, 1929, is confiscatory.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 83)

Simms and Atlantic's No. 1 University, 2,310 ft. from N, 990 ft. E, Sec. 39, Blk. 30, University Land ..... Location.

Tidal Oil Co.'s No. 3 University-E, 330 ft. N and E of SW cor. E half of NW, Sec. 39, Blk. 30, University Land ..... Top salt 1,050 ft.; drlg. 1,150 ft.

Warner-Quinlan Co.'s No. 6 University, 330 ft. S and E of NW of E half of SW, Sec. 39, Blk. 30, University Land ..... Top salt 1,065 ft.; drlg. 2,645 ft.

Warner-Quinlan Co.'s No. 7 University, 990 ft. S and 330 ft. E of NW of E half SW, Sec. 39, Blk. 30, University Land ..... Drlg. 570 ft.

CROCKETT COUNTY

California Co.'s No. 1 Shannon, Lease 3, 1,663 ft. N and 2,323 ft. W of SE cor., Sec. 42, T.C.R.R. Sur. ... Top salt 1,110 ft.; drlg. 2,221 ft.

Cushing Ref. & Gas Co.'s No. 3 Powell, 330 ft. from S and E of Sec. 53, Blk. BB, G.C.&S.F.R.R. Sur. ..... Top salt 1,030 ft.; drlg. 1,890 ft.

Empire Gas & Fuel Co.'s No. 1 Shannon, 330 ft. from N and E of Sec. 42, T.C.R.R. Sur. ..... Top salt 1,130 ft.; drlg. 2,325 ft.

Lewis & Daniels' No. 1 Pecos River bed, 19 yds. S and 37° E of NW cor., Sec. 33, Blk. 1, I.&G.N. Sur. ..... Shut down 1,384 ft.

Magnolia Pet. Co.'s No. 1 Hoover, 2,310 ft. from N and 330 ft. from E of Sec. 12, Blk. 1, G.C.&S.F.R.R. Sur... Derrick.

T. P. Coal & Oil Co.'s No. 1 Shannon, 330 ft. from S and W of Sec. 44, T.C.R.R. Sur. ..... Top salt 1,060 ft.; drlg. 2,535 ft lime.

CULBERSON COUNTY

Grisham & Hunter Oil Corp.'s No. 1 fee, 330 ft. from S and W of Sec. 14, Blk. 59, T.&P. Sur. ..... Oil show 1,437 ft.; hole full salt water 2,612 ft.; underreaming 6-in. casing; total depth 2,966 ft.

Grisham & Hunter Oil Corp.'s No. 1 Seay, 330 ft. from S and W of Sec. 16, Blk. 59, Twp. 7, T.&P.R.R. Sur. .. Hole full sulphur water 2,590 ft.; Total depth 3,021 ft.; underreaming 6-in. casing.

Grisham & Hunter Oil Corp.'s No. 3 Seay, 330 ft. from S line, 330 ft. from W line, Sec. 16, Blk. 59, Twp. 7 ... Underreaming 12½-in. casing 390 ft.; drlg. 718 ft.

Hickey & Stiver's No. 1 C. O. Finley, 600 ft. N and 1,980 ft. W, Sec. 20, Blk. 82 ..... Small show oil 1,331 ft.; shut down 2,260 ft.; hole full water; elev. 3,874 ft.

West Coast Oil & Exploration Co.'s No. 1 McGregor, C NW, Sec. 14, Blk. 81 ..... Slight show oil 740 ft.; shut down 825 ft.; repairing engine.

Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E, Sec. 1, Blk. 97, Public School Land ..... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; oil show 2,528 ft.; hole full sulphur water; running 6-in. casing; shut down 3,508 ft.

ECTOR COUNTY

Anderson's No. 1 fee, 1,320 ft. E along N line, Sec. 19, and 150 ft. N at right angles with line, Sec. 18, Blk. B-16, Public School Land ..... Moving in material.

Cosden Oil Co.'s No. 1-A University, 2,310 ft. from N., 440 ft. from E of Sec. 1, Blk. 35 ..... Spudded 300 ft.

Cosden Oil Co.'s No. 1 University-B, 1,650 ft. S and 440 ft. W of NE cor. Sec. 2, Blk. 35 ..... Drlg. 1,180 ft.

Landreth Prod. Corp.'s No. 1-S University, 990 ft. S and 440 ft. W of NE cor. Sec. 2, Blk. 35 ..... Drlg. 1,545 ft.

Landreth Prod. Corp.'s No. 1-T University, 990 ft. N, 440 ft. E, Sec. 3, Blk. 35, University Land ..... Drlg. 400 ft.

Llano Oil Co.'s No. 1 Midland, 330 ft. N and W of Sec. 18, Blk. 44, Twp. 3s, T.&P.R.R. Sur. ..... Rigging up.

Penn-Humble's No. 1 York, 330 ft. N, 2,640 ft. W, Sec. 16, Blk. 44, Twp. 3s, T.&P.R.R. Sur. ..... Top salt 1,240 ft.; top lime 3,275 ft.; show gas 3,333-35 ft.; drlg. 3,340 ft.

EL PASO COUNTY

Laytex's No. 1 Malone, 2,200 ft. SW and NW, Sec. 46, J. M. Day Sur. ..... Fishing tools 1,481 ft.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlow, Sec. 60, V-8, J. C. Clift Sur. ..... Shut down 3,000 ft.

FISHER COUNTY

Cranfill & Reynolds' No. 1 Bledsoe, 330 ft. N and E of SW SE, Sec 200, B.B.B.&C.R.R. Sur. ..... Hole full salt water 2,350-60 ft.; drlg. 2,390 ft.

Landreth Prod. Corp.'s No. 2 Cooper, 330 ft. S and W of NE cor. Sec. 116, Blk. 1, H.&T.C.R.R. Sur ..... Underreaming 6-in. casing 3,152 ft

Magnolia Pet. Co.'s No. 1 Lee, Sec. 357, 2,310 ft. from N and 4,286 ft. from W ..... Total depth 3,808 ft.; cleaning out.

Midwest Oil Co.'s No. 1 Steele, 660 ft. from S, 440 ft. from W, Sec. 210, Blk. 1 ..... Show oil 2,940-45 ft.; top pay 3,192 ft.; drlg. 3,776 ft.

Roeser-Pendleton and Amerada's No. 1 First Nat'l Bank of Waco, 660 ft. N and 600 ft. W of SE cor. NE of Sec. 204, B.B.B.&C. Sur. ..... Show oil 3,108 ft.; shut down 3,158 ft.

GAINES COUNTY

Louisiana Oil & Ref. Co.'s No. 1 Ralph, 1,320 ft. from S and W of Sec. 7, Blk. A-28, Public School Land .. Drlg. 1,605 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 6, H.&G.N. Sur. ..... Location.

Pandem Oil Corp.'s No. 1 Stokes, 2,310 ft. N and E of SW, Sec. 32, Blk. 5, G.H.&H.R.R. Sur. ..... Drlg. 2,900 ft.

GLASSCOCK COUNTY

Amerada Pet. Corp.'s No. 1 Coffee, Sec. 22, Blk. 33, Twp. 2s, 990 ft. from N, 2,310 ft. from W. ..... Drlg. 1,750 ft.

California Co.'s No. 3 Currie, 990 ft. S and 2,310 ft. W of NE cor., Sec. 219, Blk. 29, W.&N.W.R.R. Sur. .. Showing oil from 3,022-31 ft.

California Co.'s No. 1 Jones, 330 ft. S from N and E lines, Sec. 25, Blk. 33, Twp. 2s, T.&P. Sur. ..... Rig.

Timberlake & Snyder's No. 1 Meek, 2,310 ft. W and 1,600 ft. N of SE cor., Sec. 7, Blk. 34, Twp. 3s, T.&P. Sur... Show oil 970 ft.; cleaning out 1,147 ft.

Glasscock et al's No. 1 Edwards, 330 ft. from S, 1,650 ft. from E, Sec. 18, Blk. 33, Twp. 2s, T.&P.R.R. Sur.. Cem. 6-in. casing 2,276 ft.; top oil and 2,132 ft.; total depth 2,137 ft.

Kirby Pet. Co.'s No. 3 Baker, Sec. 23, Blk. 33, Twp. 2s, 1,650 ft. from N, 330 ft. W ..... Shut down 275 ft.; running 12-in. casing.

Lion Oil & Ref. Co.'s No. 3 Coffee, 990 ft. S and 330 ft. W of NE cor. Sec. 22, Blk. 33, Twp. 2s, T.&P.R.R. Sur. ..... Topped lime 2,053 ft.; setting pipe 2,068 ft.; shut down 2,071 ft.

Schermerhorn's No. 2 Kloh, 990 ft. from S and W. Sec. 13, Blk. 33, Twp. 2s, T.&P. Sur. ..... Location.

Simms Oil Co.'s No. 2 Coffee, Sec. 22, Blk. 33, Twp. 2s, 1,650 ft. from N, 330 ft. E ..... Drlg. 200 ft.

World Oil Co.'s No. 2-C McDowell, Sec. 21, Blk. 34, Twp. 2s, 330 ft. S and 2,310 ft. E of NW cor. ..... Hole full water 840-75 ft.; set 10-in. casing 885 ft.; drlg. 1,140 ft.; water pipe froze.

HOWARD COUNTY

Continental Oil Co.'s No. 2 Clay, Lease 1, 330 ft. N and 990 ft. E of SW cor. Sec. 127, Blk. 29, W.&N.W.R.R. Sur. ..... Drlg. 2,725 ft.

Continental Oil Co.'s No. 3-E Clay, 1,650 ft. N and 990 ft. W of SE cor., Sec. 138, Blk. 29, W.&N.W.R.R. Sur.. Top pay 1,762 ft.; shut down 1,793 ft.

Continental Oil Co.'s No. 13 Clay-A, 1,980 ft. S and 200 ft. W of NE cor. of Sec. 139, Blk. 29, W.&N.W.R.R. Sur. ..... Drlg. 1,190 ft.

Cosden Oil Co.'s No. 6 Roberts-A, 200 ft. N and E of SW cor. Sec. 129, Blk. 29, W.&N.W.R.R. Sur. ..... Shut down 1,456 ft.; sulphur water 1,433-46 ft.

Empire Gas & Fuel Co.'s No. 4 Clay, 330 ft. N and 2,310 ft. W of SE cor. Sec. 127, Blk. 29, W.&N.W.R.R. Sur. ..... Drlg. 340 ft.

Magnolia Pet. Co.'s No. 1 Snyder, 330 ft. from N and 990 ft. from W, Sec. 36, Blk. 30, Twp. 1s, T.&P. R.R. Sur. ..... Rigging up.

Magnolia Pet. Co.'s No. 13 Dora Roberts, 2,440 ft. N and 1,650 ft. E of SW cor., Sec. 136, Blk. 29, W.&N.W. Sur. ..... 1,100 ft. oil in hole; top pay 2,938 ft.; total depth 2,943 ft.

Merriwether's No. 1 Smith, 150 ft. from S. 2,490 ft. from W. Sec. 45, Blk. 33 ..... Rigging up standard tools at 1,540 ft.

Midwest Exploration Co.'s No. 5-C Clay, 990 ft. from E and S, Sec. 138, Blk. 29, W.&N.W.R.R. Sur. ..... Drlg. 1,240 ft.

Moody Oil Corp.'s No. 23-B Roberts, 990 ft. from N and W of Sec. 137, Blk. 29 ..... Total depth 261 ft.; set 10-in. casing.

Plymouth Oil Co.'s No. 4 Abrams, 330 ft. from N and 1,650 ft. from W, Sec. 5, Blk. 32, Twp. 2s ..... Top pay 2,480 ft.; shut down 2,519 ft.; plugged back 2,505 ft.; pumped 20 bbls., 15 per cent water, in 24 hrs.; preparing to shoot well; plugging back.

Pure Oil Co.'s No. 3 Hooks, 2,440 ft. S, 1,036 ft. W. Sec. 140, Blk. 29, W.&N.W.R.R. Sur. ..... Location.

Schermerhorn Oil Co.'s No. 2 Kloh et al, 990 ft. from S and W of Sec. 13, Blk. 33, Twp. 2s, T.&P. Sur. ..... Location.

Shell Pet. Corp.'s No. 2 Abrams, Sec. 13, Blk. 33, Twp. 2s, 2,310 ft. from S, 990 ft. from E, T.&P. Sur. ..... Top pay 2,135 ft.; pumped 400 bbls. oil in 19 hrs.; total depth 2,053 ft.

Simms Oil Co.'s No. 2 Clay, 330 ft. from S, 2,310 ft. from W. Sec. 127, Blk. 29 ..... Drlg. 1,193 ft.

Ward Oil Co.'s No. 21 Roberts, 2,310 ft. N and 990 ft. E of SW cor. of Sec. 137, Blk. 29, W.&N.W.R.R. Sur. .. Shut down 1,708 ft.

HUDSPETH COUNTY

California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor., Sec. 19, Blk. E ..... Top pay 2,851 ft.; underreaming 10-in. casing 2,600 ft.

Western States Oil Co.'s No. 1 Moore, C SE, Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ..... Shut down 2,760 ft.

Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW, Sec. 12, Blk. 18 ..... Shut down 3,140 ft.

IRION COUNTY

Beesley's No. 1 Sawyer Cattle Co., 1,320 ft. N and E of SW cor., Sec. 3,032, Blk. 24, H.&T.C.R.R. Sur. ..... Drlg. 560 ft.

Crawford Oil Co.'s No. 1 Williams, 450 ft. from N, 150 ft. from W, Subd. 8 ..... Shut down 1,105 ft.

Carl Cromwell's No. 1 Tankersley, 2,490 ft. from S and E. Sec. 1,219, T.C.R.R. Sur. ..... Shut down 520 ft.

Cromwell et al's No. 1 Fuller, 2,134 ft. N and 631 ft. W of SE cor., Sec. 81, Blk. 1, H.&T.C.R.R. Sur. ..... Fishing 710 ft.

Dennys & Andrews' No. 1 Tankersley, 2,660 ft. from W, 600 ft. from S of Sec. 4, H. N. Wallace Sur. ..... Skidded 25 ft. north; spudding 21 ft.

Kingwood Oil Co. et al's No. 1 J. D. Suggs, SE NW SE, Sec. 19, Blk. 7, H.&T.C. Sur. ..... Show gas 7,656 ft.; set 4½-in. casing 7,550 ft.; encountered 2,400 ft. sulphur water at 7,818 ft.; testing at 7,670 ft.

J. A. Starkweather's No. 1 Lindley, Sec. 1,160½, 900 ft. from S, 150 ft. from E, H.&T.C. Sur. on E ..... Shut down 1,475 ft.

P. H. Williams' No. 1 Ash, C of Sec. 20, Washington County ..... Drlg. 5,805 ft.

JONES COUNTY

J. H. Adsite et al's No. 1 Swenson, C of NE of SE, Sec. 192, B.B.B.&C. Sur. ..... Shut down 2,508 ft.

Continental Oil Co.'s No. 1 Phillips, 440 ft. from S and 330 ft. from E of Phillips 80-ac. tract, Sec. 16, Blk. 19, T.&P. Sur. ..... Drlg. 580 ft.

Cosden-Herbert et al's No. 3 Bickley, 330 ft. N and W of SE cor. of S half NW, Sec. 50, Blk. 18 ..... Rig.

Cranfill & Reynolds' No. 1 Stevens, 990 ft. from N and 3,630 ft. from W of John McMullen Sur. 337 ..... Drlg. 2,210 ft.

Mid-Tex Oil & Gas Co.'s No. 1 King ..... Shut down 1,520 ft.

Shabeen et al's No. 1 King ..... 800 ft. fluid in hole; cleaning out 2,066 ft.; top pay 2,061 ft.; 1,200 ft. oil in hole.

KENT COUNTY

California and Atlantic's No. 1 Wallace, 330 ft. from S and W, Sec. 60, Blk. G, W.&N.W.R.R. Sur. ..... Drlg. 1,300 ft.

White & Smith's No. 1 Pursley estate, 1,320 ft. from E and 2,640 ft. from S of Sec. 8, Blk. E, H.&T.B. Sur... Fishing 300 ft.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 700 ft. from N and W line of F. Lotta Sur. ..... Shut down 800 ft.

McLean & Jamison's No. 1 Cannon, 1,940 ft. N and 300 ft. W of SE cor. Robert Cochran Sur. ..... Shut down 1,350 ft.

LOVING COUNTY

Humble Oil & Ref. Co.'s No. 1 Kloh, 2,640 ft. N and W, Sec. 35, Blk. 55, Twp. 2, T.&N.O.R.R. Sur. ..... Fishing 3,750 ft.

Independent O. & G. Co.'s No. 1 Wheat, 330 ft. each way from W cor of Sec. 85, Blk. 1, W.&N.W. Sur. ..... Fishing 3,657 ft.

Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W, Sec. 91, Blk. 1, W.&N.W. Sur. ..... Rigging up standard tools.

LYNN COUNTY

Luewell Oil Co.'s No. 1 May, 2,310 ft. S, 2,310 ft. W, Sec. 10, Blk. 7, E.L.R.R. Sur. ..... Shut down 190 ft. for casing.

George McCamey's No. 1 Edwards, 165 ft. N and E, Sec. 5, Blk. 2, L.S.&W. Sur. ..... Top salt 2,140 ft.; oil show 1,580-90 ft.; hole full sulphur water 4,730 ft.; set 6-in. casing 4,733 ft.; drlg. 5,025 ft.

MENARD COUNTY

Cromwell & Duffey's No. 2 Winslow, 250 ft. S and E of NW cor. NE of NE, Sec. 36, J. H. Gibson Sur. ..... Drlg. water well.

I. C. Barnett's No. 2 Callan, Sec. 1, 1,050 ft. from S, 1,190 ft. W ..... Est. 10-bbl. show oil from 1,132-52 ft.; 3,000,000 ft. gas from 1,267-68 ft.

MITCHELL COUNTY

California Co.'s No. 8 Foster, Lease 1, 1,100 ft. S and 990 ft. W NE cor., Sec. 6, Blk. 29, Twp. 1s, T.&P. R.R. Sur. ..... Drlg. 1,000 ft.

Gibson & Johnson's No. 2 Scott, 150 ft. N and 2,490 ft. W of SE cor., Sec. 7, Blk. 19, Lavaca Navigation Co. ..... Spudded and shut down 720 ft.

Morrison et al's No. 1 Morrison, Sec. 1, Blk. 29, Twp. 1n, 2,390 ft. from N, 660 ft. from E, T.&P.R.R. Sur. ..... Rigging up.

Morrison et al's No. 2 Morrison, 2,390 ft. from N and 660 ft. from E of Sec. 31, Blk. 28, Twp. 1n, T.&P. R.R. Sur. ..... Location.

Seiger's No. 1 Scott, C of NE of SW, Sec. 36, Blk. 17, S.P.R.R. Sur. ..... Shut down 720 ft.

Teas & Wheeler's No. 1 Radford, 1,320 ft. N and W of Sec. 1, Blk. 27, T.&P. Sur. ..... Drlg. 4,488 ft.

NOLAN COUNTY

Gibson & Johnson's No. 1 Bond, 1,320 ft. from N and 1,980 ft. from E of Sec. 42, Blk. 20, T.&P. Sur. ..... Total depth 2,800 ft.

Phillips Pet. Co.'s No. 1 Plunkett, 330 ft. N and W of SE cor. NW, Sec. 66, Blk. 22, T.&P. Sur. ..... Drlg. 4,471 ft.

PECOS COUNTY

Amerada Pet. Corp.'s No. 1 University, 990 ft. from S, 2,310 ft. W, Sec. 13, Blk. 18, University Land ..... Drlg. 473 ft.

Arkansas Fuel Oil Co.'s No. 1-A University, 1,650 ft. from S and W of S.c. 32, Blk. 16 ..... Shut down 935 ft.; good for 1,000,000 ft. gas in sand; getting ready to run 10-in. casing.

Artec Oil Co.'s No. 1 Gaddard, C of Sec. 19, Blk. 11, H.&G.N. Sur. ..... Location.

E. W. Bateman's No. 1 Cunningham, 330 ft. from S and W line of NE, Sec. 34, Blk. 11 ..... Shut down 1,395 ft.

Black & Dittman's No. 1 Pecos Valley, 160 ft. from SW and SE lines, Sec. 34, Blk. 3, H.&T.C.R.R. Sur. ..... Drlg. 240 ft.

Buell & Hagan's No. 1 Byrne, 990 ft. from N and 2,310 ft. from E of Sec. 54, Blk. 10, H.&G.N.R.R. Sur. .... Shut down until after holidays.

California Co.'s No. 6 Smith, Lease No. 1, 1,700 ft. N and 330 ft W of SE cor., Sec. 37, Blk. 194, G.C. &S.F.R.R. Sur. ..... Moving in material.

California Co.'s No. 2 Tippett, 2,016 ft. from S and 1,040 ft. from E of Sec. 2, D. F. Robertson Sur. ..... Temporarily abandoned.

Cardinal Oil Co.'s No. 1 Tippett, 330 ft. N and W of SE cor., Sec. 36, Blk. 12, H.&G.N.R.R. Sur. ..... Drlg. 494 ft.

Cardinal Oil Co.'s No. 1 Sun-Tippett, Sec. 1, 165 ft. from S, 150 ft. W, J. T. Robertson ..... Drlg. 350 ft.

Cardinal Oil Co.'s No. 1 Tidal-Tippett, 1,625 ft. N, 495 ft. E, Sec. 40, Blk. 194, T.C.&S.F.R.R. Sur. ..... Location.

Continental Oil Co.'s No. 2 University, 330 ft. S and 1,680 ft. E of NW cor. of Sec. 6, Blk. 17, University Land ..... Hole full water 1,460 ft.; total depth 1,570 ft.

Continental Oil Co.'s No. 3 University, 330 ft. S and 2,371 ft. E of NW cor. Sec. 6, Blk. 17, University Land ..... Pumped 57 bbls. at total depth 1,285 ft.

Continental Oil Co.'s No. 6 University, 330 ft. S and 3,031 ft. E of NW cor. of Sec. 6, Blk. 17, University Land ..... Cellar.

E. W. Bateman et al's No. 1 Cordova, 3,490 ft. from N and 1,515 ft. from W, Sec. 29, Blk. 11, H.&G.N.R.R. Sur. ..... Shut down 1,425 ft.

Crosby Prod. & Royalty's No. 3 Smith, 330 ft. from S and W line, Sec. 24, Blk. 194 ..... Drlg. 700 ft.

Cosden Oil Co.'s No. 1 McDonald, 350 ft. from N and E of Sec. 1, H.E.&W.T. Sur. ..... Drlg. 1,660 ft. in lime; flowed sulphur water 1,645 ft.

Cranfill & Reynolds' No. 1 Masterson, SW cor. Sec. 104, Blk. 10 ..... Top pay at 1,249 ft.; second pay 1,268 ft.; 18⅛ bbls. oil; deepened to 1,450 ft. without increase; total depth 1,495 ft.

Dixie Oil Co.'s No. 1 McKinzie, 3,300 ft. from N and 2,025 ft. from W of Sec. 15, Blk. 604, G.C.&S.F. ..... Rigging up.

Freeman et al's No. 1 Pecos Valley, 150 ft. from NW and SW of NE half of S, Sec. 36, Blk. 3, H.&T.C. Sur. ..... Drlg. 1,145 ft.

A. M. Griffith's No. 1 Ferrenbach et al, 2,112 ft. from W line, 1,320 ft. from S line, Sec. 9, Blk. 603, G.C.&S.F. Sur. ..... Running 10-in. casing 60 ft.

Geyer-Frates' No. 1 White-Baker, 2,310 ft. from N and E line of Sec. 29, Blk. Z, T.C.R.R. Sur. ..... Location.

Harrison & Cromwell's No. 1 White-Baker, 2,310 ft. from S and E, Sec. 42, Blk. 11, H.&G.N.R.R. Sur. .... Oil show 822-27 ft.; fishing 1,615 ft.

Humble Oil & Ref. Co.'s No. 1 Cunningham, C of SW, Sec. 34, Blk. 11, H.&G.N.R.R. Sur. ..... Hole full water 1,480 ft.; 500,000 ft. gas 870 ft.; drlg. 1,891 ft.

Hussman Oil Co.'s No. 1 Eaters, 960 ft. from N and 300 ft. E, Sec. 83, Blk. OW, T.M.R.R. Sur. ..... Spudded.

Independent O. & G. Co.'s No. 1 Phelps, 150 ft. N and W of N half of NE, Sec. 26, Blk. 11, H.&G.N.R.R. Sur ..... Shut down 1,885 ft.

J. L. Kennedy's No. 1 Roberts, C of Sec. 78, Blk. 3, T.&P.R.R. Sur. ..... Drlg. 2,370 ft. in anhydrite.

Sam Kitts et al's No. 1 Sherbino, 330 ft. from N and 990 ft. from W line, Sec. 52, Blk. C-4, G.C.&S.F.R.R. Sur. ..... Top salt 976 ft.; shut down 2,490 ft.

Kirby Pet. Co.'s No. 1 Stockton Cattle Co., 330 ft. from N and E, Sec. 2, T.C.R.R. Sur. ..... Shut down 320 ft.

Landreth & Dunning's No. 1 McDonald, 330 ft. N and E of SW cor. Sec. 40½, Blk. 12, H.&G.N.R.R. Sur. ..... Temporarily abandoned 1,670 ft.

Landreth Prod. Corp.'s No. 1-A University, 1,980 ft. from S line, 660 ft. from E line, Sec. 13, Blk. 18..... Completed Sept. 6 with 66,485,000 ft. gas from 950-52 ft.; now killing gas to deepen.

Landreth Prod. Corp.'s No. 1 Smithpeter, 330 ft. from S and 280 ft. from E line, Sec. 31, Blk. 11, H.& G.N.R.R. Sur. ..... Oil show 2,269-94 ft.; 100,000 ft. gas; total depth 2,282 ft.

Landreth Prod. and Henshaw Bros.' No. 1-E University, 330 ft. N and W of SE cor. W half NE, Sec. 13, Blk. 18, University Land ..... Shut down 896 ft.

Landreth Prod. and Henshaw Bros.' No. 2-E University, 330 ft. S and E of NW cor. of W half of NE, Sec. 13, Blk. 18, University Land ..... Drlg. 670 ft.

Landreth Prod. Corp. et al's No. 1-I University, 330 ft. from S and W of NE of NE, Sec. 24, Blk. 18 ..... Set 10-in. casing; shut down 1,095 ft.; 2 bbls. oil hourly 960 ft.

Landreth Prod. and Henshaw Bros.' No. 2-I University, 330 ft. S and W of NE, Sec. 24, Blk. 18, University Land ..... Cellar.

Mauch & Kroger's No. 1 Holmes, Sec. 5, Blk. 178, T.C. Sur. ..... Drlg. 1,500 ft.

Mazda Oil Co.'s No. 1 Cordova Union Land Co., 2,310 ft. from N and 990 ft. from E of Sec. 103, Blk. 11, H.&G.N. Sur. ..... Drlg. 915 ft.

Merrick-Bristow's No. 1 Neville, 330 ft. from S and W, Sec. 42, Blk. 12, H.&G.N.R.R. Sur. ..... Top salt 645 ft.; shut down 1,670 ft.; will deepen.

R. E. Moore's No. 1 Arnold, 1,320 ft. from S and 660 ft. from E lines of Sec. 18, Blk. 1, H.&T.C.R.R. Sur. .... Show oil 1,216 ft.; show oil 1,403 ft.; pulling 8-in. casing; drlg. 1,600 ft.

Mid-Kansas Oil & Gas Co.'s No. 8 M. A. Smith, 250 ft. N and 1,005 ft. W of NE cor., Sec. 21, Blk. 194, G.C.&S.F. Sur. ... Location.
Moncrief's No. 1 Sullivan, 150 ft. E of C of SW, Sec. 58, Blk. 11, H.&G.N.R.R. Sur. ... Drlg. 1,120 ft.
H. T. O'Neal's No. 1 Power, 2,640 ft. from N and 150 ft. from W, Sec. 1, Blk. 132, T.&St.L.R.R. Sur. ... Shut down 200 ft.; moved material off.
J. D. O'Mara's No. 1 Bennett, Sec. 592, 1,460 ft. from S, 150 ft. from E, G.C.&S.F. Sur. ... Fishing 875 ft.
J. D. O'Mara's No. 1 Streety, C of Sec. 1, W. P. Howard Sur. ... Shut down 1,625 ft.
Pecos Crude Oil Pur. Co.'s No. 4 Pecos Valley, 770 ft. from SW and 1,320 ft. from SE of W, Sec. 22, Blk. 10, H.&G.N.R.R. Sur. ... Rig.
M. M. Rowan's No. 1 University, NE, Sec. 25, Blk. 16 ... Total depth 2,490 ft.; shut down; fixing to plug back.
Shell Pet. Corp.'s No. 1 Percival, 330 ft. from N and E of SE, Sec. 199, Blk. 3, I.&G.N. Sur. ... Location.
Sides & Cloyd's No. 2 Blackstone & Slaughter, C NW of Sec. 34, Blk. A-2, T.&C.R.R. Sur. ... Shut down 362 ft.
Skelly Oil Co.'s No. 1 Bowers, SW cor. N half SE, Sec. 31, Blk. 16 ... Initial production 58 bbls. 1,649-50 ft.
Skelly Oil Co.'s No. 1 University, 330 ft. from S and W of N half SE, Sec. 31, Blk. 16 ... Total depth 1,676 ft.; swabbed 12 bbls. oil off fluid.
Taylor-Link Oil Co.'s No. 6 University, 330 ft. from N and 330 ft. from E of W half of SE, Sec. 13, Blk. 18.. Drlg. 1,415 ft.
Taylor-Link Oil Co.'s No. 9 University, 990 ft. N and 2,310 ft. W of SE, Sec. 31, Blk. 16, University Land.. Show oil and show gas 1,340-45 ft.; shut down 1,615 ft.
The Texas Company's No. 1 Graef, 4,758 ft. from W and 908 ft. from S of Sec. 44½, Blk. 12, H.&G.N. Sur. ... Drlg. 840 ft.
Transcontinental and Arkansas Nat'l Gas Co.'s No. 1 Matthews, 330 ft. from S, 1,060 ft. from E, Sec. 10, Blk. 194 ... Drlg. 475 ft.
Trees Oil Co.'s No. 3 Trees, 330 ft. from S and W of Sec. 90, Blk. 8, H.&G.N. Sur. ... Moving material.
World Oil Co.'s No. 2 University, Sec. 31, Blk. 16, 330 ft. from N, 2,310 ft. E ... 500,000 ft. gas 1,225-40 ft.; drlg 1,270 ft.
World Oil Co.'s No. 1-C University, 1,650 ft. from N, 990 ft. W, Sec. 7, Blk. 20, University Land ... Ready to spud.

PRESIDIO COUNTY

Eastland Oil Co.'s No. 1 Tootle, C Sec. 17, Blk. 1, D.P. R.R. Sur. ... Spudded; shut down.
T. P. Coal & Oil Co.'s No. 1 Bogel, 330 ft. S and W, Sec. 83, Blk. 8, G.H.&S.A. Sur. ... Gas show 2,810 ft.; drlg. 3,687 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 1-C University, 2,598 ft. S and 250 ft. W of NE cor., Sec. 1, Blk. 2, University Land.. Top pay 2,903 ft.; 1,000 ft. fluid in hole; top pay 6,807 ft.; shut down 8,000 ft. for 6-in. casing; pulling 18-in. casing.
Big Lake Oil Co.'s No. 4-C University, 1,120 ft. from N and 1,096 ft. from E of Sec. 1, Blk. 2 ... Showing oil and gas at 8,220 ft.; flowed 197 bbls. oil, 6,437,000 ft. gas; total depth 8,220 ft.
Texon Oil & Land Co.'s No. 2-B University, 4,655 ft. from S, 250 ft. from W, Sec. 36, Blk. 9 ... Drlg. 2,971 ft., black lime.
Texon Oil & Land Co.'s No. 3-B University, 2,240 ft. from S, 920 ft. from W, Sec. 36, Blk. 9 ... Fishing 2,990 ft.
Thomas & Brann et al's No. 1 Hughes, C NE of Sec. 7, Blk. 1, T.C.R.R. Sur. ... Top salt 1,085 ft.; drlg. 2,775 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ... Shut down 2,990 ft.
H. T. Hansford's No. 1 Williams, 150 ft. from S and W, Sec. 17, Blk. 6, H.&G.N. Sur. ... Total depth 200 ft.; underreaming 12-in. casing.
Black & Fink's No. 1 Brooks, 1,980 ft. N and 660 ft. W, Sec. 16, Blk. 59 ... Shut down 605 ft.
Southern Crude Oil Pur. Co.'s No. 1 Kloh-Rumsey, 2,310 ft. N and W SE cor., Sec. 23, Blk. 51 ... Total depth 5,191 ft.; show oil 5,191 ft.
David R. Thompson's No. 1 A. A. Eddins, Sec. 9, Blk. C-1 ... Drlg. by casing 5,490 ft.

RUNNELS COUNTY

Gibson & Johnson's No. 1 Johnson, 2,310 ft. N and 1,650 ft. W of SE cor., Sec. 150, E.T.R.R. Sur. ... Spudding.
Gibson & Johnson's No. 2 Serratt, 2,310 ft. from S and 1,650 ft. from E of Sec. 150, E.T.R.R. Sur. ... Derrick.
Gibson & Johnson's No. 1 Woods, Sec. 529, 2,600 ft. from S and 300 ft. from E, T. T. Williams Sur. ... Drlg. 3,405 ft.
H. E. Lamar's No. 1 Long, 2,310 ft. N, 6,900 ft. E, Sec. 262 ... Shut down 1,375 ft.
McLean's No. 1 Clayton, 150 ft. from N line, 270 ft. from W line of Sec. 133 ... Shut down 1,185 ft.
Vacuum Oil Co.'s No. 4 McMillan, 555 ft. S and 717 ft. W of NE cor., Lot 22, Domingo Diaz Sur. No. 532... Location.

SCHLEICHER COUNTY

Delmar Oil Co.'s No. 1 O'Harrow, C of NW, Sec. 56, Blk. 1, G.H.&S.A.R.R. Sur. ... Shut down 1,020 ft.
Interstate's No. 1 Whitten, 1,320 ft. from N and W, Sec. 35, Blk. LL, T.C.R.R. Sur. ... Shut down 1,020 ft.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,470 ft. from W, G.H.&S.A.R.R. Sur. ... Hole slopped over with oil at 4,925 ft.; made one good flow; set 6-in. casing 5,050 ft.; drlg. 5,600 ft.

SCURRY COUNTY

Byrd & Harmon's No. 1 Murphy, Jr., 330 ft. from N and E of Sec. 114, Blk. 97, H.&T.C. Sur. ... Shut down 1,372 ft.
Camp Spring Oil & Ref. Co.'s No. 3 Guinn, 1,300 ft. from S, 300 ft. from E, Sec. 12, Blk. 3, H.&T.C.R.R. Sur. ... Drlg. 3,500 ft.
Cottingham & Briscoe's No. 1 Trees, C SE Sec. 147, Blk. 97 ... Sulphur water 3,390 ft., total depth.
I. B. Mimms et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C. Sur. ... Spudded and shut down 300 ft.
G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ... Shut down 4,325 ft. for 5-in. casing.
E. L. Smith Oil Co.'s No. 1 Moore, 1,326 ft. from S and W, Sec. 379, Blk. 97 ... Top salt 750 ft.; encountered 500,000 ft. gas 1,510 ft.

STERLING COUNTY

Sherwood B. Owen's No. 1 Tweedle, 1,980 ft. from N and 1,320 ft. from E of Sec. 10, Blk. T. T.&P. Sur. ... Drlg. 1,850 ft.

SUTTON COUNTY

Independent Oil & Gas Co.'s No. 1 Willson, Sec. 30, Blk. A, 1,650 ft. from N, 2,310 ft. from W ... Rig.
Independent and Sun Oil Co.'s No. 1 Allison, Sec. 39, Blk. A, 200 ft. from N and 1,000 ft. from W ... Drlg. 4,156 ft.

TAYLOR COUNTY

Adams et al's No. 1 Lowe, 150 ft. from N and W of Sec. 19, League 120, Guadalupe Sur. ... Underreaming 8-in. casing; total depth 2,037 ft.
Condor Pet. Co.'s No. 1 Allen, C of NW, Sec. 220, Blk. 64, H.T.C.R.R. Sur. ... Location.
John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor., Sec. 46, Lunatic Asylum Land ... Show oil 4,917 ft.; shut down 5,105 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW, Sec. 155, Blk. D, M.-K.-T.R.R. Sur. ... Shut down 1,150 ft.; setting 8-in. casing 850 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ... Shut down 2,925 ft.
Mrs. J. B. McBee's No. 1 Sam Belt, C Sec. 78, Blk. D-7, E.L.R.R. Sur. ... Shut down 880 ft.
Transcontinental Oil Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S, Sec. 26, Blk. 161, G.C.&S.F.R.R. Sur. ... Shut down 820 ft.
Woodley & Jones' No. 1 Pankenham, C SE NW, Sec. 43, Blk. B-2, C.C.S.D.&N.G.R.R. Sur. ... Shut down 625 ft.

TERRY COUNTY

Kingsland Oil Prod. Co.'s No. 1 Brownfield, C NW SW SW, Sec. 7, Blk. 1-A, E.L.R.R. Sur. ... Fishing bailer 5,080 ft.

TOM GREEN COUNTY

Cannon et al's No. 1 Rust, 990 ft. S, 990 ft. W of NE cor. of Sec. 745 ... Rig.
Ellis et al's No. 1 Lewis, 450 ft. S and 150 ft. E of SE cor. of J. W. Sur. in Albert Black Sur., Sec. 75 ... Location.
Fitzgerald & Taliaferro's No. 1 Bennett, C SW, Sec. 1,628, E. H. Ringer ... Shut down 2,480 ft.
Fuhrman Pet. Co.'s No. 1 Wardlaw, 2,650 ft. from N and E of Sec. 6, Blk. 17, H.&T.C. Sur. ... Shut down 1,095 ft.
E. W. Wiley et al's No. 1 Maier, 200 ft. from E, 110 ft. from N, Sec. 6, Blind Asylum Land ... Drlg. 250 ft.

UPTON COUNTY

Gulf Prod. Co.'s No. 3-B Hughes, 160 ft. N and 161 ft. W of most southerly SE cor. of their 200-ac. lease "B" out of Wm Teer Sur. ... Rig.
Pure Oil Co.'s No. 3 Hughes, 150 ft. S and 767 ft. E of NW of their 300 ac., Sec. 4, Wm. Teer Sur. ... Drlg. 610 ft.
Pure Oil Co.'s No. 4 Hughes, Sec. 4, 330 ft. S and E SW cor., Snowden & McSweeney lease ... Drlg. 190 ft.
Snowden & McSweeney's No. 3 Hughes, 330 ft. from S and W of 80-ac. lease, Sec. 4, Wm. Teer Sur. ... Rigging up.
T. P. Coal & Oil Co.'s No. 14-A Lane, 990 ft. N and 2,310 ft. W SE cor., Sec. 5, G.C.&S.F. Sur. ... Drlg. 1,114 ft.
Texon and Continental's No. 2 Sherk, 430 ft. from N line, 330 ft. from W line, Sec. 35, Blk. 1 ... Drlg. 1,200 ft.
T. P. Coal & Oil Co.'s No. 1-D Lane, 430 ft. from S, 330 ft. W, Sec. 36, Blk. 1 ... Drlg. 305 ft.
T. P. Coal & Oil Co.'s No. 1 Reese, 330 ft. from N and E line, Sec. 2, Blk. 3 ... Building road.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, Sec. Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ... Shut down 4,850 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ... Gas sand 2,491-2,520 ft.; tested 125,700 ft. gas; reset 8-in. 2,511 ft.; reaming; shut down 5,443 ft.
Phantom Oil Co.'s No. 1 Ingram, 175 ft. W of E line and 300 ft. N of S line, Sec. 44, Blk. D-8, E.L.&R.R. Sur... Show oil 1,535 ft.; set 12½-in. casing 1,451 ft.; undereaming 12-in. casing 1,593 ft.
Valvert Oil Corp.'s No. 1 Bassett, C NE, Sec. 47, Blk. Y. Set 15½-in. casing 767 ft.; set 10-in. casing 1,510 ft.; shut down 4,009 ft.

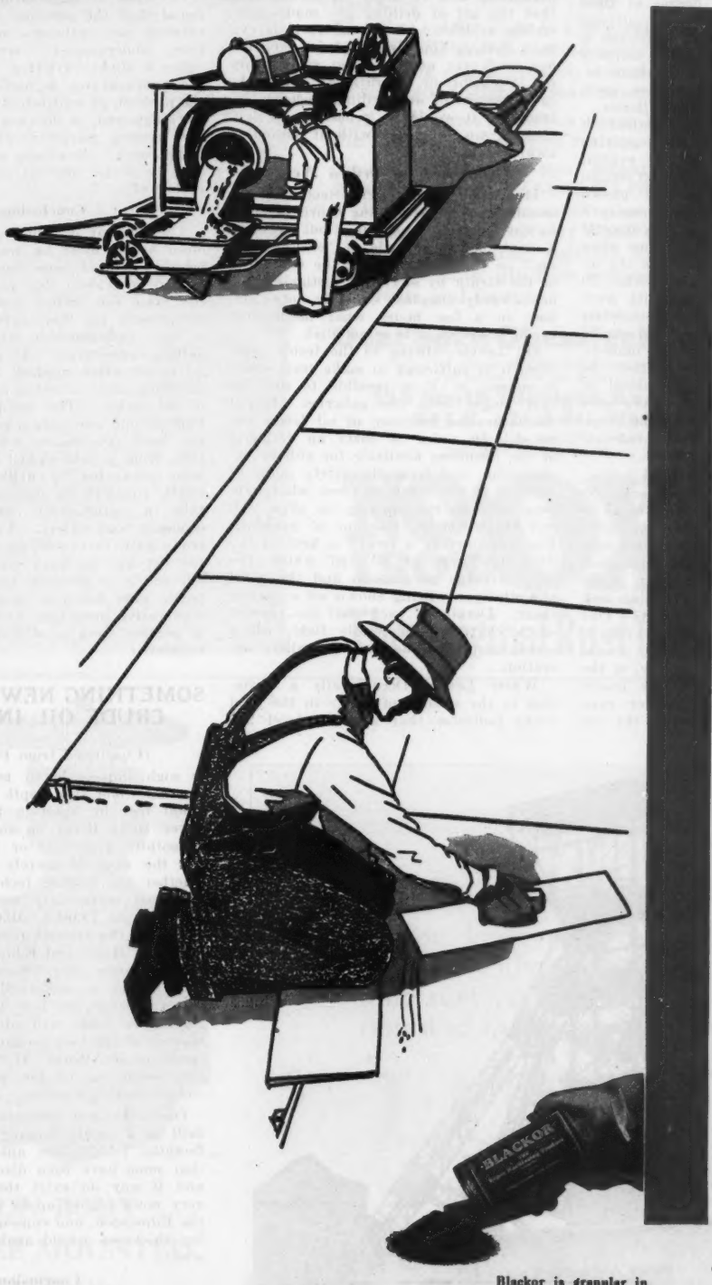
WARD COUNTY

Alpine Oil & Gas Co.'s No. 1 Dakan, 228 ft. from NE and 150 ft. from SE line, Tract 8, Sec. 11, Blk. 5, H.&T.C. Sur. ... Rigging up.
E. J. Anderson's No. 1 Johnson, 150 ft. N, 346 ft. E, Sec. 7, Blk. 32, H.&T.C.R.R. Sur. ... Spudded 30 ft.
Atlantic et al's No. 1 Dorr, 1,730 ft. S, 920 ft. W, Sec. 2, J. Howe Sur. ... Total depth 665 ft.; underreaming 10-in. casing.
Atlantic and Delmar's No. 6 Hayzlett, 2,490 ft. from NE and NW lines, Sec. 17, H.&T.C. Sur. ... Top salt 1,140 ft.; drlg. 2,065 ft.
Atlantic and Delmar's No. 7 Hayzlett, 1,650 ft. from NE and NW of Sec. 17, Blk. 5 ... Location.
Fugler et al's No. 1 Grand Falls townsite, 185 ft. SE of NW line and 500 ft. NE of NE, Sec. 7, Blk. 32, H.&T.C. Sur., located Sec. 11, Blk. 5, H.&T.C. Sur. ... Location.
Grand Falls Oil Co.'s No. 1 Boogher-Holden, 2,598 ft. S, 4,026 ft. E, Sec. 11, Blk. 5, H.&T.C.R.R. Sur. ... Drlg. 620 ft.
Gulf Prod. Co.'s No. 3 Hutchins, 2,310 ft. from N and 330 ft. from W, Sec. 1, Blk. F, G.M.M.B.&A. Sur. ... Top salt 1,035 ft.; underreaming 10-in. casing; reaming at 1,266 ft. anhydrite and salt.; drlg. 1,430 ft.
Gulf Prod. Co.'s No. 7 O'Brien, 330 ft. S and W, Sec. 22, Blk. F, G.M.M.B.&A. Sur. ... 2,000 ft. fluid in hole, 1 bbl. of water.; drlg. 2,908 ft.; no increase in oil.
Gulf Prod Co.'s No. 3 Wristen Bros., 220 ft. NE of SW and 220 ft. SE of NW, Sec. 18, Blk. 5, H.&T.C. Sur. . Show gas 1,960-70 ft.; filling up with sulphur water 2,520-27 ft.; shut down 1,000 ft. salt water at 2,545 ft.
F. E. E. et al's No. 1 Wristen, 990 ft. from S and W lines of Sec. 26, Blk. B-28 ... Top salt 700 ft.; shut down 2,573 ft.
E. B. Lovelace et al's No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 162, Blk. 34, H.&T.C.R.R. Sur. ... Underreaming 10-in. casing; water 1,245 ft.; drlg. 2,750 ft.
Mid-Continental's No. 1 Conway, 2,316 ft. E, 922 ft. S, Sec. 23, Blk. 29, Public School Land ... Drlg. 370 ft.
Penn and Atlantic's No. 2 Bennett, 2,310 ft. S line, 1,650 ft. W line, Sec. 16, Blk. 34, H.&T.C.R.R. Sur. ... Underreaming 8-in. casing; total depth 887 ft.
Penn and Atlantic's No. 1 Cooper, 330 ft. from NE and 990 ft. from NW of Sec. 43, Blk. 34, H.&T.C. Sur. ... Drlg. 610 ft.
Shell Pet. Corp.'s No. 1 Owens, located NE cor. of Sec. 16, Blk. 5, H.&T.C.R.R. Sur. ... Drlg. 3,037 ft.; 2,400 ft. fluid, ½ bbl. water hourly.
Shipley et al's No. 4 Hayzlett, 2,050 ft. NW of SE and 2,420 ft. NE of SW line of Sec. 17, Blk. 5, H.&T.C. R.R. Sur. ... Top salt 720 ft.; shut down 2,546 ft.; plugged back 2,538 ft.
Shipley et al's No. 5 Hayzlett, assume common line Secs. 16 and 17 is N and S, 220 ft. S and 1,910 ft. W, Sec. 17, Blk. 5 ... Plugged back from 2,546 ft. to 2,538 ft.; shot 90 qts. 2,473-93 ft.; no results.
Shipley et al's No. 1 Monroe, 330 ft. SE SW, Sec. 3, Blk. 1 ... Shut down 165 ft.
Sun Oil Co.'s No. 2 Sealy, 330 ft. from N and E of Sec. 88, Blk. F, G.M.M.B.&A. Sur. ... Drlg. 980 ft.

WINKLER COUNTY

V. T. Bolin's No. 2 Brown et al, 2,000 ft. S and W of NE, Sec. 4, Blk. B-5, Public School Land ... Top salt 1,300 ft.; shut down 2,332 ft.
Bashara et al's No. 2 Bashara, 990 ft. from S, 2,310 ft. from E, Sec. 17, Blk. B-3, Public School Land ... Top brown lime 2,306 ft.; drlg. 2,355 ft.
Cinderella Syndicate's No. 1 Hendricks, 330 ft. N, 1,650 ft. W, Sec. 42, Blk. 26, Public School Land ... Total depth 150 ft.; building rig.
Humble Oil & Ref. Co.'s No. 2 Walton, 2,310 ft. from N and W of Sec. 47, Blk. 26 ... Top lime 2,263 ft.; top salt 960 ft.; cem. 10-in. casing 2,270 ft.; drlg. 2,512 ft.
Liner Drlg. Co.'s No. 1 Campbell, 330 ft. from N and E cor., Sec. 2, Blk. B-5 ... Top brown lime 2,510 ft.; drlg. 3,675 ft.
Sun Oil Co.'s No. 1 Sealy, 2,310 ft. N line, 330 ft. from W line, Sec. 52, Blk. F, C.M.M.B.&A. Sur. ... Drlg. 500 ft.

it's the mix that COUNTS



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BLACKOR

The Super Abrasion-Resistant Steel Facing

MINING FOR OIL IN PECHELBRONN AREA

(Continued from Page 154)

bronn work a certain amount of imported oil.

The refineries of Pechelbronn, which have an annual capacity of 100,000 tons of crude, are located near the center of the producing area.

As they have to treat completely the crude oil coming from the concession which contains paraffin, they are arranged for a complete refining process. These crude oils are composed largely of saturated hydrocarbons and the sulphur content is very low.

The recovery of commercial products is about as follows:

	Per cent
Gasoline	8.7
Kerosene	20.0
Gas oil	8.0
Lubricating oil	36.8
Paraffin	2.5
Brea and coke	14.0
Fuel and losses	10.0

Without going into detail of manufacture, the following points may be mentioned:

Extraction of Light Products

The most modern methods are applied at Pechelbronn and permit obtaining by fractionation condensation at the lowest cost and the maximum recovery, not only in quantity but also in quality, the following light products:

Aviation gasoline.
Tourist gasoline.
Heavy gasoline.
White spirit.
Ordinary kerosene.
Kerosene de luxe.
Gas oil.

Extraction of Lubricants

For the lubricating oils Pechelbronn uses vacuum distillation with the injection of superheated steam.

Paraffin Extraction

At Pechelbronn the extraction of paraffin is accomplished two different ways depending on the viscosity of the distillates and nature of the paraffins which they contain.

In ordinary machine oil the paraffin is extracted by filter presses. The distillates furnishing automobile lubricating oils are treated by supercentrifuges (Sharples method).

The ordinary refining of sulphuric acid is supplemented with a treatment by decolorizing activated earth. The activation of this earth is done at Pechelbronn, the raw material consisting of clays coming from America and from French colonies.

The product obtained after treating with these activated earths have first class stable qualities proven by absence of deposits in the motors where they are used.

Pechelbronn manufactures a whole line of machine oils. Its automobile "Antar" brand is a lubricant which can, for quality, rival the best brands on the market.

Mr. Forissier's Description

Mr. Forissier's description, in part, follows:

Owing to its situation on the western fringe of the sedimentary plain of the Rhine Valley, the well-defined anticlines which are a feature of other fields where terrestrial upheaval has been violent, are entirely absent at Pechelbronn; the individual accumulations are localized in extent and are due to small faults in the regular structure. These small local deposits, lenticular in shape, are of varying extent and thickness, but the strata enclosing them all run in the same direction from northeast to southwest, and their inclination is the same—5 to 6 degrees.

Distances between wells are somewhat arbitrarily fixed at from 70 to 120 meters, as owing to the subsequent gallery exploitation there is no incentive to place them closer together. The oil levels are searched for at depths indicated by neighboring wells, and although there are several horizons (as many as 10), it is unlikely that more than half of the wells will prove productive. A flow is exceptional and of brief duration. Annual production amounts to 35,000 to 40,000 tons, obtained by the aid of about 600 pumps.

Exploitation of Galleries

According to the data obtained from the drilled wells, the field is divided into zones, and each zone into stories, each story consisting of a number of adjoining oil horizons—three or four in a height of 8-12 meters. One net of galleries only is driven in each story, a little above the lowest level. The underlying level is drained by sumps, the upper levels by drilling; this method has been found to give the same degree of final exhaustion of the deposit as continued bleeding. In reality, gallery operation is the same in principle as the ordinary method of exploitation, except that instead of drilling from the surface, operations are conducted from the galleries.

The unreliability of the method of drilling hitherto practiced for supplying details of the strata drilled, is evident from the fact that six of the 40 drilled wells pierced by galleries had passed through oil levels without the operator's knowledge. The difficulty of correctly placing the galleries will be obvious when it is said that in some instances the oil levels had not been located to within 20 meters. In some places deposits were found to have been drained completely by the drilled well, others had failed prematurely, as galleries in the immediate vicinity proved prolific; other deposits, again, had not been reached at all by the drill. These experiences have modified original opinion as to the possibility of formulating a definite ratio of production by the two methods.

Deviation From Vertical

The intersecting of drilled wells by galleries has permitted observations to be made regarding deviation from the vertical, but on this head no definite rule can be established; a note has been made of the greatest deviation, so that, if desired, the cutting into of a drilled well may be avoided with certainty. One reason for avoiding old drilled wells in gallery exploitation is that there would be danger of flooding the gallery, if the well has passed through water levels. It is found that if a thin barrier, even of porous soil, is left between the old well and the gallery, there is little risk of inundation; even with pressures of 15-20 kilos, the water has never filtered through to any appreciable extent.

Finally, local bands of sandstone or conglomerate have been encountered; bands even a foot thick having the effect of slowing down mining progress by half, the use of explosives being strictly prohibited. Here again it will be obvious how necessary it is to have accurate knowledge of the levels at which to run the galleries.

There is nothing unusual in these experiences, and it must be remembered that the art of drilling has made great strides of late. All the same, it is evident that drilling systems with continuous flush are not the most satisfactory for Pechelbronn operations; with the cable system of dry drilling, recently introduced, it would be impossible to drill through an oil level without becoming aware of it.

Experiences in Drilled Wells

Hitherto this has been effected by the usual means of examining debris brought to the surface in drilling, but recently a trial has been made of "electric coring," or rather, measuring the resistance of the strata by electrical methods. This has already supplied valuable data, and does in a few hours what mechanical coring takes days to accomplish.

Oil Levels—Owing to the feeble pressure, it is sufficient to make tests every 5 meters, as it is possible to drill to that height from the galleries. Initial discharge and pressure of oil levels are noted. In order to form an estimate of the resources available for gallery exploitation, and from the safety point of view, it is necessary to know what happens between the opening up of a well and the ultimate cessation of pumping. For this purpose a record is kept of the daily discharge of oil and water, the daily average per month and the total annual figures being shown on a special chart. Details of each well are entered on a chart of the whole field, which serves as the groundwork for gallery operation.

Water Levels—Occasionally a variation in the volume of water in the mud tanks indicates that a water level has been pierced, but usually there is no outward sign. Tests are made every 50 or 100 meters, and if an influx of water is remarked, steps are taken to locate the level as accurately as possible.

Permeability of Formations

To classify the varying degrees of hardness of formations, the simple and reliable systems has been adopted of estimating by the length of time the bit is in use before it has to be changed on account of water.

Temperature of Formations

Contrary to expectation, it has been found that the presence of oil does not exercise any influence on the temperature underground; structural faults cause a slight variation. Knowledge of the temperatures is useful for studying the problem of ventilation of underground workings, and, in the case of water levels, for freezing purposes when a shaft is being sunk. Readings are taken from two or three medical thermometers in each well.

Conclusions

The amount of time spent in making observations must be determined by the benefits derived from those observations. It will be evident that certain data, useful even for drilled wells, more than compensate for their collection and are, in fact, indispensable when it comes to gallery exploitation. Although this method is not often applied, its operation is receiving close attention in the majority of oil fields. The results obtained at Pechelbronn are very encouraging, as it has been possible to achieve a production, from a field looked upon as having been exhausted by drilled wells, practically equal to the original tonnage, and this in satisfactory circumstances of economy and safety. Conditions, it is true, were favorable on the whole, but the deposits as such were not rich in oil, and it is probable that if richer deposits were taken in hand elsewhere, remunerative operation would result, even if greater working difficulties were encountered.

Head frame and shaft house over one of the Pechelbronn, France, oil mines.

SOMETHING NEW ABOUT CRUDE OIL IN ALBERTA

(Continued from Page 152)

is nigh impossible to reach the Madison limestone at a depth shallower than 7,000 feet by starting to drill in the lower Belly River on the high dips of a foothills type fold or fault. Such being the case, it merely boils down to whether the drilling technique has been advanced sufficiently to drill holes to depths from 7,000 to 10,000 feet. When that time has arrived, these outer bordering Belly River and Edmonton folds will furnish some very interesting information. From a geological standpoint it seems possible, in fact highly probable, that these folds will ultimately be the bearers of the long-sought, medium grade crude oil of Alberta. At the present time they seem out of the question from a commercial standpoint.

One might ask the question, "Why not drill on a gently dipping eastern border foothills fold?" The answer to this is that none have been discovered to date, and if any do exist they involve beds very much higher up in the section than the Edmonton, and consequently the drilling thickness would again be too excessive.

Conclusion

In conclusion it is in place to remark that the present development in Alberta, both in the plains and the foothills areas, may not lead to the discovery of a medium grade crude oil. It is impossible to state or even venture a guess as to the exact geological conditions or the approximate geographic location of such a body of crude. However, we feel certain that present operations, if followed to their logical conclusions, will throw enough light on the subject to be of great value when the drilling technique has reached a stage where 8,000 to 10,000-foot holes are an everyday occurrence.

Success or Failure in Pipe Line Protection

The line on the left coated with a product that is competitive to NO-OX-ID was down for three years. In spots the coating has failed. The blisters are full of water. Yet that coating looked just as good when it was new as NO-OX-ID looks.

The line on the right is a line reconditioned with NO-OX-ID and inspected after three years. All old pitting and corrosion was dead and the line in such good shape it was covered up again.

The difference between these two examples is the difference between failure and success.

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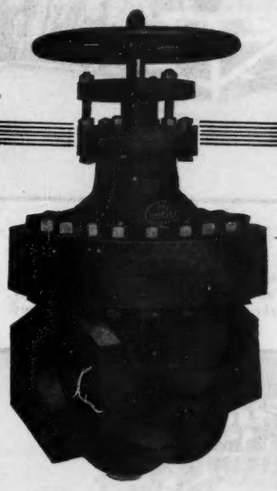

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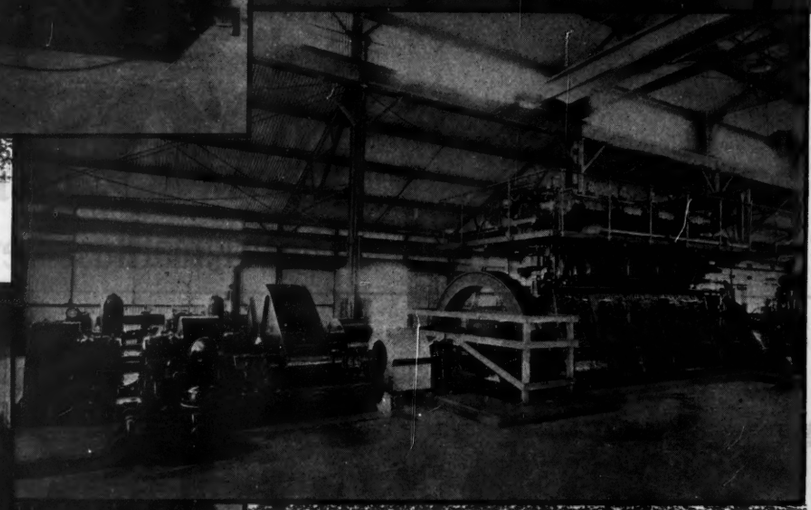
HUMBLE Pipe Line Company

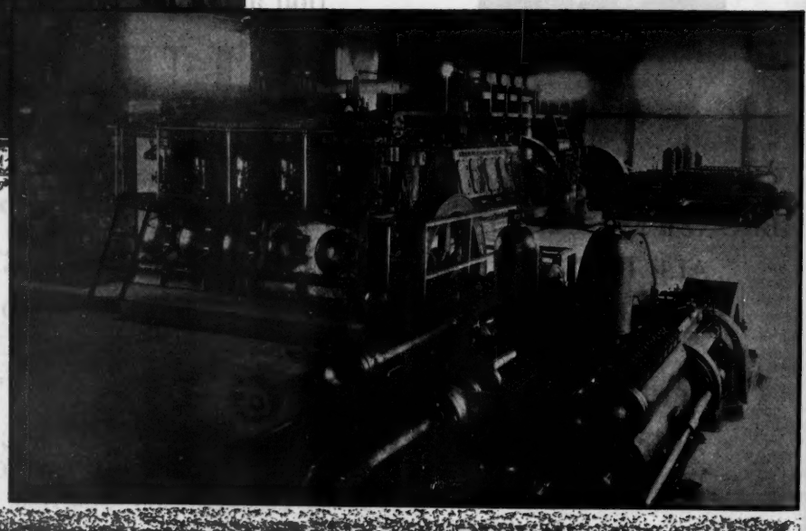
Above is shown a 6" x 24" Prescott triplex pump, 25,000 bbl. capacity, installed in the Pendell, Tex., station of the Humble Pipe Line Company.



The 6" x 24" Prescott triplex pump, 25,000 bbl. capacity, as shown above, is installed in the Kemper, Tex., station of the Humble Pipe Line Company.

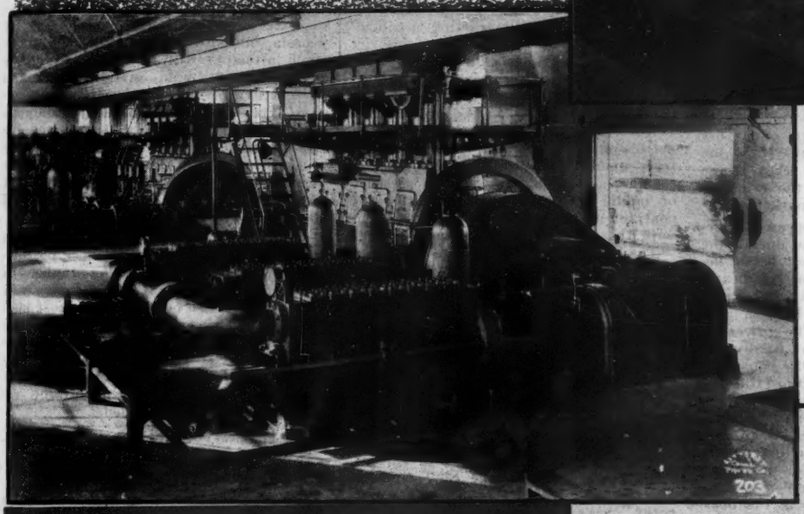
The picture above shows a 5¼" x 18" Prescott duplex pump, 10,000 bbl. capacity, installed in the Humble Pipe Line Company's station at Comyn, Tex.

The picture at the right shows a 5¼" x 18" Prescott duplex pump, 10,000 bbl. capacity, and a 6" x 25" Prescott triplex, 25,000 bbl. capacity, in the Chilton, Tex., station of the Humble Pipe Line Company.



At the right is shown the 6" x 24" Prescott triplex pump, 25,000 bbl. capacity, as installed at the Satsuma, Tex., station of the Humble Pipe Line Company.

This picture below shows a 6" x 24" Prescott triplex pump, 25,000 bbl. capacity, at the Hearne, Tex., station of the Humble Pipe Line Company.



A view of the Satsuma, Tex., station of the Humble Pipe Line Company. This is another one of the many Humble stations containing pumps manufactured by the Prescott Company, Menominee, Mich.

Uses

PRESCOTT

MENOMINEE

> > > > PUMPS < < < <

EXPORT OF AIRPLANES FACTOR IN CONSUMPTION

(Continued from Page 151)

dicates worldwide approval of American aviation products, both from private purchasers and from foreign governments as well. This growth is all the more remarkable in view of the fact that many foreign countries have subsidized their home air transport companies conditional upon these companies using only domestic products, which naturally sets up a barrier against the sale of American aviation products in such countries.

France and England have also been active in expanding their export sales of aircraft and equipment, thus further adding to the potential world market for American oil products. England during 1928 exported $7,434,700 worth of aircraft and equipment, against $5,000,000 worth in the previous year. France in 1927, the last year for which detailed data are available, exported $8,000,000 in aircraft and equipment.

Europe Leads in Air

While Europe still leads the United States in the volume of air passenger transportation, the United States has outstripped all other countries in its air mail business. There are more miles of air mail transportation routes regularly flown in the United States than in all of the countries in Europe combined, and the American service is steadily expanding.

Latin America is the scene of considerable aviation development at the present time, and this territory, adjacent to the United States, is naturally expected to turn to this country for the aviation gasoline and lubricating oils required for its aircraft. Of the 23 countries which imported aircraft from the United States during the first nine months of 1929, 12 were in Latin America. The development of mail and passenger routes in South America, where other modes of travel are exceedingly slow and tedious, has opened a wide market for American aircraft and aviation fuel and lubs.

Mexico, due to its proximity to the United States, has been an important purchaser of American aircraft, now ranking as the principal purchaser. During the first eight months of the current year, Mexico imported 70 airplanes, 34 engines, and $66,587 worth of parts, with a total valuation of $1,560,071 from the United States, compared with 20 planes, 11 engines and $21,162 in parts during the full year 1928, or a total valuation of $236,068.

Canada Leading Purchaser

Canada is also a leading purchaser of American airplanes and aircraft equipment, ranking first in 1928 with 62 planes, 43 engines and $540,215 in parts, for an aggregate valuation of $1,403,873. During the first eight months of the current year, Canada imported from the United States 58 airplanes, 19 engines, and $629,551 in parts, with total valuation of $1,296,056. Development of home manufacturing facilities in Canada has cut into that country's purchases in the United States, but commercial aviation is developing at so rapid a rate in Canada that it is expected that the Dominion will continue a large buyer of American planes and equipment for some years to come.

China has purchased a number of American planes for military use, and it is expected the next few years will witness a great development of commercial aviation in the Orient, and American manufacturers are planning extensive development in marketing operations.

The leading aircraft companies in the United States, with well-rounded sales organizations, are thus far accounting for the great bulk of the export movement, and as most of the special aviation oils have been developed by American refiners to conform to the requirements of the engines powering these planes, export volume in aviation gasoline and lubricating oil may be expected to show increases in proportion to the gains in aircraft exports from this country. In addition, the extensive aircraft activity in other countries should be reflected in further gains in world consumption of American oil products for the aircraft industry.

An American company, Tide Water Oil Co., holds a contract for supplying the Graf Zeppelin with all lubricants which the giant dirigible uses, and other American oil companies have been successful in developing lubricating oil sales to other aircraft operators in foreign markets.

RECORD YEAR IN OIL IS REPORTED IN SOVIET

(Continued from Page 147)

recent commentary on Soviet petroleum in the world markets, pointed out that in studying Soviet exports of various petroleum products one is bound to notice considerable fluctuations in the spread between the physical quantities of the exported products and their value. Thus, for instance, with a 31 per cent growth of the quantity of gasoline exported from Soviet Russia, its value increased by 54.2 per cent. A reverse situation is found in the case of fuel oil exports, chiefly mazout, where the quantity of export increased by 48 per cent while the value increased only by 8.5 per cent, these variations, of course, being the result of changes in prices in world markets.

England, the largest European petroleum consumer, was the scene during the past few years of the hardest battle between the Soviet Naphtha Syndicate, with its subsidiary "Russian Oil Products," and the combined English and American oil companies. The prices of this "war" was so high that finally the involved parties early in 1929 consented to an agreement with ROP (Russian Oil Products) which put an end to the embargo on Soviet oil exported to England. This agreement, which is to last until 1932, provides for selling Soviet petroleum products at the prevailing market prices in England, and allots the Soviet agency a large share in the business.

In Germany, in addition to an agreement with the largest national concern, "Benzol-Verband" and other large firms, a Soviet organization "Derop," similar to that of the ROP in England, began its activities in retail marketing of Soviet oil products. The German petroleum market offers great possibilities for Soviet Russia, particularly in view of the highly developed commercial relations between the two countries.

Exports to France

In France, the Soviet Naphtha Syndicate has an agreement with the "Petrofina," a consolidation of the largest French oil trading concerns. The French navy is also an important consumer of Soviet oil products. The new French petroleum law, providing for the granting of import licenses directly to the importer, is working against the retail distributing agency of the Naphtha Syndicate, because heretofore all the petroleum products shipped to France were sold by the Naphtha Syndicate on an f.o.b. basis.

The development of Soviet imports of petroleum into Italy is said to be quite normal. The Italian navy thus far is the principal purchaser of Soviet oil, on a long term contract. The "AGIP," the semi-official Italian marketing organization, is another customer of Soviet Russia, also working under a long term contract for the purchase of mazout, gasoline, and other products. "AGIP" late in 1928 made a contract with Anglo-Persian providing for the purchase of petroleum products from the latter contract upon the expiration of the Soviet contract in 1930, but under pressure of public opinion refused to ratify the contract and has extended its agreement with the Soviet Naphtha Syndicate.

The Soviet Naphtha Syndicate supplies a large portion of the petroleum products distributed in Spain by the Spanish Petroleum Monopoly.

South America and South Africa are also becoming important markets for Russian oil.

Aggressive Export Policy

According to reports from Russia, the Soviet Syndicate has no intention of limiting its exports in co-operation with oil interests in the United States or Europe. "The co-operation of the Soviet oil industries with the world petroleum concerns," says this report, "is constantly developing. An agreement with the English subsidiary of an American concern opens new possibilities for marketing oil products in England. Friendly relations with the other two big American oil companies were established in 1925; the mutual benefits of this co-operation are now quite evident. The desire of the petroleum exporters' association of America to improve the world condition of the oil industry by regulating the output revives a talk that there will be a limitation of oil exports from Soviet Russia. Soviet oil products appeared on foreign markets only within the last few years. It is true that these exports are growing very rapidly and that their success makes the Soviet petroleum industry an important factor in the world market; however, it is stated, Soviet Russia cannot be satisfied with the present achievements and will endeavor to expand further the outlets for its oil exports.

"The success of Soviet exports has been greatly facilitated by the desire of a number of European countries to free themselves from dependence upon a world petroleum monopoly. A new move of the world petroleum concerns to limit Soviet exports would be interpreted as an aggressive step not only against Soviet Russia, but also against these countries. Such attempts will lead only to closer co-operation between Soviet Russia and the countries which purchase its oil products. The anticipation of some competitors of Soviet oil industry that extensive Russian exports are only a temporary feature and that in the near future Soviet Russia will not be able to take care of its domestic petroleum market, are said to be quite futile.

"Industrial activities of Soviet Russia show enormous progress, with the petroleum industry in the leading ranks. In order to guarantee that this industry will in the future also be one of the most successful both in satisfying the domestic demand and in contributing to the exports of Soviet Russia, it is necessary that the program set for it by the five-year plan of national economy be revised and greatly expanded."

LARGEST OIL TANK CAR

—Photo by Underwood and Underwood.

Huge tank car manufactured for Krook's Petroleum Co., Stockholm, Sweden. It has a capacity of 13,480 gallons.

Production of Oil By the Principal Oil Trusts of the U. S. S. R.

	(In thousands of metric tons) 1927-28	1928-29
Azneft	7,574	8,683
Groznoft	3,576	4,441
Embaneft	250	268
Kubchernoft	106	157
Production by small producers at Baku	84	85
Total	11,590	13,634

Production of Casinghead Gasoline

	(In thousand tons) 1927-28	1928-29
Azneft	160	166
Groznoft	107	127
Embaneft	1	1
Kubchernoft		1
Total	268	295

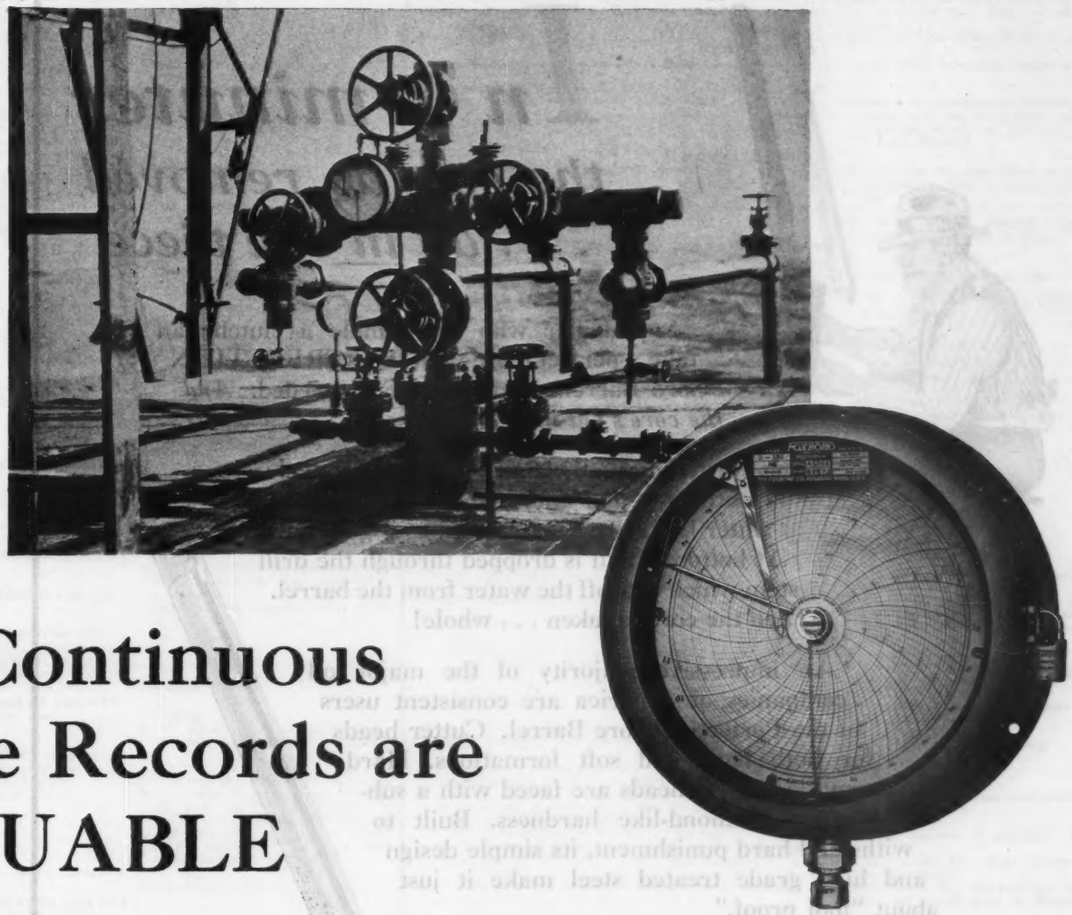
Daily Refinery Operations of the Principal Trusts

	Tons 1927-28	1928-29
Azneft	5,278	6,404
Groznoft	3,353	4,184
Embaneft	229	226
Total	8,860	10,814

Exports of Oil Products From the U. S. S. R.

	(In metric tons) 1928-29	1927-28
Kerosene	765,615	692,408
Gasoline	1,019,184	758,556
Lubricating oils	192,429	182,692
Solar oil	65,080	49,690
Gasoil	252,519	202,080
Lubricating mazout	2,871	11,442
Mazout oil	16,904	.....
Fuel mazout	1,060,014	672,665
Motor fuel	33,219	15,925
Paraffin base crude oil	143,471	141,177
Balakhany crude oil	10,878	11,372
Other oil products	189	1,682
Total	3,562,373	2,739,689

Countries of destination—	Metric Tons 1928-29	1927-28
England	714,014	381,270
Egypt	234,525	215,240
British India	171,403	152,440
Germany	477,005	361,822
France	350,448	349,258
Italy	510,920	477,398
Belgium	95,410	78,887
Spain	303,003	202,932
Czecho-Slovakia	91,147	107,932
Austria and Hungary	31,577	
Turkey	179,614	118,685
Greece	18,216	37,170
Denmark and Sweden	62,508	45,931
South America	16,177	5,477
Africa	83,831	19,045
Finland	14,176	11,146
Latvia and Lithuania	31,361	40,647
Esthonia	16,256	5,380
Persia	47,100	43,400



Typical installation of a Foxboro Recording Pressure Gauge on a gas well head, and the Foxboro Recording Pressure Gauge

These Continuous Pressure Records are INVALUABLE

Continuous written records of pressure at the well heads will inform you when you have water encroachment; heading conditions in the well; and when you should shift to gas lift.

On a pumping well the recording gauge gives clear indications of the condition of the pumps.

When repressuring, with the use of recording gauges you can find the actual rock pressure and closely approximate the porosity of the sand structure.

Recording Gauges can also be used to great advantage in measuring open flow gas volumes and gas flows at low (atmospheric) pressure.

Wherever pressure or vacuum gives an indication of operating conditions, the accurate, sturdy, and dependable Foxboro Recording Gauges should be installed.

They should be used also because the initial cost is not high and the maintenance cost is exceedingly low.

Get in touch with the nearest Branch Office.

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Agents for Robinson Patented Orifice Flange Fittings.

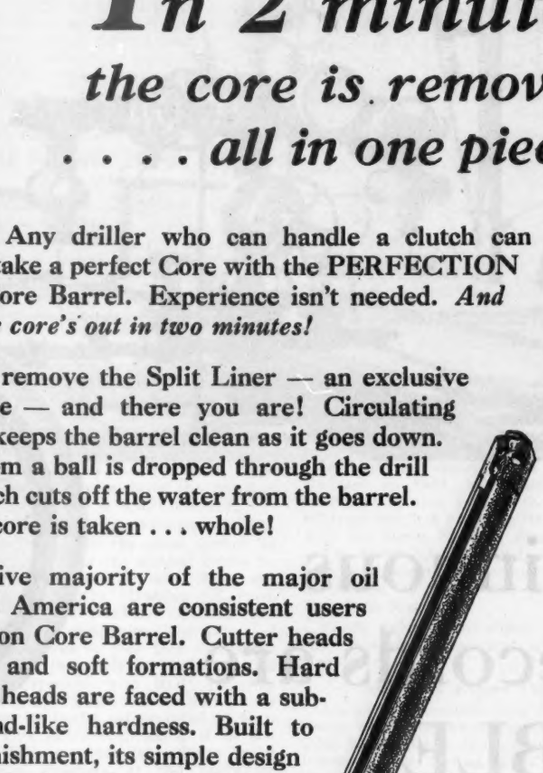
Instruments for Controlling, Recording and Indicating Temperature, Flow, Humidity and Pressure

In 2 minutes
the core is removed . . . . all in one piece

Any driller who can handle a clutch can take a perfect Core with the PERFECTION Core Barrel. Experience isn't needed. *And the core's out in two minutes!*

Just remove the Split Liner — an exclusive feature — and there you are! Circulating water keeps the barrel clean as it goes down. At bottom a ball is dropped through the drill stem which cuts off the water from the barrel. Then the core is taken . . . whole!

An impressive majority of the major oil companies of America are consistent users of the Perfection Core Barrel. Cutter heads for both hard and soft formations. Hard formation cutter heads are faced with a substance of diamond-like hardness. Built to withstand hard punishment, its simple design and high grade treated steel make it just about "fool proof."



A Brewster Product

The Split Liner is an *exclusive* feature of the PERFECTION Core Barrel

Ask about other Brewster A. P. I. Products: Shouldered Tool Joints; Chrome Nickel Drill Collars; Six Blade Rock Bits; Fish Tail and Special Gumbo Bits; Core Barrel Cutter Heads for both hard and soft formations—the Cutter Heads for hard formations are faced with a substance of diamond-like hardness.

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SUCCESSORS TO OIL CITY IRON WORKS INC.
Shreveport, Louisiana

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Exclusive Export Agents: The W. K. M. Company, 74 Trinity Place, New York, N. Y.

The **Perfection** *Core Barrel* **will not back off going into the hole . . . . .**

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 66)

CALDWELL COUNTY

Joe Bruner's No. 1 Neil, S. Morris Sur., 400 ft. NE and NW lines.....Dropped from reports until work starts.

J. Harper et al's No. 1 Crenshaw, in the J. Burleson Sur., 600 ft. NE and 320 ft. NW of farm.....Location.

Stone et al's No. 2 Robert Guinn, Joseph Burleson Sur., 150 ft. to NE and NW lines of 225-ac farm.....Drlg. 2,140 ft. in Del Rio.

Keen & Malcolm's No. 1 Mollie McNeal, George C. Kimball Sur., 2,500 ft. to W line, 860 ft. to N line, 1 mile S from old Luling Field.....Drlg. 890 ft.

San Antonio Petroleum Corp.'s No. 1 Gustave Walkerhagen, Thomas Maxwell Sur., 150 ft. to NW and SW lines, 11 miles W from Lockhart.....Drlg. in Edwards at 1,136 ft.

Cranfill & Reynolds' No. 1 Beversdorf, A. Floyd Sur.....Location.

W. H. Harper's No. 3 Thomas, J. Roberts Sur.....Fishing for pipe.

G. R. McIntire's No. 1 J. B. Towns, in Isaac Weldon Sur., 4,900 ft. to NE line, 1,350 ft. to SE line of survey.....Drlg.; T. D. 2,630 ft.; sand in Austin (corrected depth).

DE WITT COUNTY

Gibson & McIntyre's No. 1 William Van Roeder.....T. D. 1,480 ft.; drlg. in gumbo and lime.

F. P. Zoch's No. 1 Steinman, John Garelli Sur., 976 ft. from SW line, 1,797 ft. from NW line.....Rigged up and ready.

H. T. Roe's No. 1 Leinhardt.....T. D. 1,750 ft.; shut down after testing sand at this depth.

DIMMIT COUNTY

Texas Fuel Gas Co.'s No. 1 City Nat'l Bank (Laxon).....Setting csg. at 680 ft.

Texas Fuel Gas Co.'s No. 1 Laxon, Sur. 653, 5 miles SW Carrizo Springs.....T. D. 1,425 ft.; setting csg.; test has shown some gas and rainbows of oil.

DUVAL COUNTY

National Oil Co.'s No. 2 Ball, Agua Poquita Sur., Blk. 3..Drlg. 1,570 ft.

F. P. Zoch's No. 1 King, Blk. 25, Howman Smith Subd., W. R. King ranch, Dugo Hinijosa grant, 660 ft. N line, 660 ft. E line.....Location.

Southern Oil Co.'s No. 1 Welder Wood, Sur. 215.....T. D. 750 ft.; standing, waiting on water.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlaw.....Shut down 3,000 ft. awaiting orders; expect to drill deeper.

FAYETTE COUNTY

W. J. Kelly's No. 1 Burke.....Dropped from reports until work is resumed.

FRIO COUNTY

Frank B. LeFeure's No. 1 H. W. and R. L. Eschenburg, Edward Gallagher Sur. No. 789, 3,980 ft. W of SE cor. of Edward Gallagher Sur. No. 788 and 1,320 ft. S of N line of Edward Gallagher Sur. No. 789.....Location.

GOLIAD COUNTY

Compton Oil Co.'s No. 1 Fromme, Dexter Sur.....Standing.

F. P. Zoch's No. 1 Kaufman.....T. D. 4,200 ft.; sand 4,186-98 ft.; showing gas; bailing in today.

Humble Oil & Refining Co.'s No. A-2 M. C. Spangle, in the H.&G.N.R.R. Sur., 2,000 ft. N. 20 degrees W of No. A-1 M. C. Spangle, 6 miles N of Goliad.....T. D. 707 ft.; sand; no showing.

Union Prod. Co.'s No. 3 Ray, 3 miles E of No. 2.....T. D. 4,060 ft.; estimated 15-bbl. oil well, open flow making 2 heads every 24 hrs.; builds up 1,600 lbs. rock pres. when closed in but exhausts volume at once when valve is opened.

Union Prod. Co.'s No. 1 Lucas, Juan Moya Delgado Sur.....Drlg. shale 2,835 ft.

GONZALES COUNTY

Acme Oil & Royalty Corp.'s No. 1 Weber, Thomas Wright Sur.....Drlg. 1,560 ft. in sand rock.

Dunning & Pierce's No. 1 Stahl, Sarah Hendricks Sur., 150 ft. to SE and NE lines of farms.....Location.

Adams & Lyles' No. 1 Jackson Sur.....Spudded in and shut down; depth corrected.

Joe Bruner's No. 1 R. D. and J. C. Miller.....T. D. 3,490 ft.; shut down.

Linderman Brothers' No. 2 F. H. Frampton, in Richard Heath Sur.....Derrick.

Finnell & Elam's No. 1 Robinson, Liverpool Sur.....Dropped from reports until work is resumed.

Hoffman et al's No. 1 Borrer, J. Stewart Sur.....Dropped from reports until work is resumed.

Marshall & Moore's No. 1 St. Clair, R. H. Wymn Sur.....Dropped from reports until work is resumed.

United North & South's No. 1 J. A. Kerr, in James Bowman Sur., 150 ft. S of CNL of tract, 11 miles W from Waelder.....Drlg. in shale 2,620 ft.; set 2,612 ft. 10-in. csg.

United North & South Dev. Co.'s No. 1 J. E. Preston 120 acres, John Oetkins Sur., 1,350 ft. to S line, 750 ft. of W line.....T. D. 3,222 ft.; drlg. in shale; L. L. Jones's No. 1 J. F. Kindred, W. W. Barnes Sur., 700 ft. W line, 1,000 ft. S line.....Location.

Cullen & West's No. 1 E. Menking, Blk. 24, 150 ft. to N and 450 ft. to E line of Blk. 24, 14,050 ft. to NW and NE line of Sur.....Drlg. in shale 2,312 ft.

A. G. Keiffer's No. 1 B. B. Dix.....Drlg. in Taylor marl 2,800 ft.; drill stem stuck.

GUADALUPE COUNTY

H. H. Weinert's No. 1 A. E. Dowdy, J. C. Darst Sur., 110 ft. S line, 36 ft. E line.....Location.

Shell Petroleum Corp.'s No. 1 Denmann, Jose de la Baume Sur.....Drlg. in sandy shale at 3,134 ft.; make test for crooked hole.

H. H. Weinert's No. 2 A. E. Dowdy, J. C. Darst Sur., 100 ft. N line, 36 ft. E line.....Location.

O. W. Killam's No. 1 C. N. Adams, Josias Randolph Sur., 150 ft. to NW and NE lines of farm.....T. D. 2,827 ft.; abandoned.

J. O. Dore's No. 1 Appling, H. Cottlebur.....Dropped from reports until work is resumed.

Grayburg Oil Co.'s No. 1 Wells, Jose La Baume.....T. D. 3,902 ft.; drilled plug and bailed dry; bottom of hole 7 ft. in Edwards.

Pagenkopf & Kennon's No. 1 Halm, Joseph Kent Sur., 5 miles E of Seguin.....T. D. 1,960 ft. in Edwards limestone.

Adams-Lyles-Walton's No. 1 Zoberoski, in James D. Clements Sur.....Bailing 15 bbls. oil per day from 2,485 ft.; top of Eagleford.

HAYS COUNTY

E. A. Bucklin's No. 1 A. Elsner.....T. D. 725 ft.; shut down.

John H. Foster, trustee's No. 1 W. G. Barber, 7 miles SE from Buda.....T. D. 671 ft.; topped Edwards with show of oil; have not tested; will make another location quarter-mile NW; this test first reported as J. A. Lang's No. 1 Barber.

JACKSON COUNTY

Wright Brothers' No. 7 Drushell.....Standing 3,875 ft.

JIM HOGG COUNTY

Deep Rock Oil Co.'s No. 1 Kelsey.....Standing 2,582 ft.

L. M. Holden's No. 4 Jones, 1,820 ft. to N line, 1,320 ft. to E line of 160 acres out of Share 5 "A," Dego Hinojosa grant.....Standing 42 ft.

JIM WELLS COUNTY

E. W. Ogden's No. 1 G. Farris, M. Perez Sur.....T. D. 2,615 ft.; drlg. in shale.

KARNES COUNTY

Ruby & Claypool's No. 1 Tom. V. Zepeda Sur., 850 ft. N line, 1,600 ft. E line.....Shut down in shale at 1,238 ft.

Benedum-Trees' No. 1 S. E. Crews, Britton Odem Sur.....T. D. 4,185 ft.; drlg. in sandy clay.

Hurador Oil Co.'s No. 1 W. E. Porter.....Reaming hole down at 3,100 ft.

KERR COUNTY

L. R. Page and associates' No. 1 Real.....T. D. 4,500 ft.; drlg. below 4,500 ft.

D. B. Mascho's No. 1 J. L. Love, C.C.S.D.&R.G.N.G. Sur., Sec. 1,594, 5,280 ft. to N line, 1,000 ft. to W line.....Water well completed; heavy duty cable tool rig on ground (first reported as O. E. Tunstill No. 1 Love Ranch).

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur.....T. D. 680 ft.; installed heavier rig (cable tools); report showing.

Sterling's No. 1 Willie Werner, 2 miles NW from Borgett No. 1 Haag.....T. D. 880 ft.; fishing (cable tools); 110 ft. oil in hole.

KLEBERG COUNTY

Bowen-Sarles' No. 1 Robert H. Simmons, Sec. 7, King Subd., 3 miles W from Ricardo.....Derrick up; moving in rig.

KINNEY COUNTY

Lloyd Oil Co.'s No. 1 G. B. Moore, Sur. 117.....T. D. 2,710 ft.; in lime flowing sulphur water.

Mardon Oil Co.'s No. 2 Jim Clamp, in the John Winters Sur. No. 346, near No. 1.....Moving in cable tools.

LEE COUNTY

Byrd et al's No. 1 H. L. Bastle, 1,200 ft. N and 1,000 ft. E of 80-ac. tract of Wm. Johnson.....Drlg. 3,000 ft.

Texas-Louisiana Corp. Carbon's No. 1 Bryan, in the S. F. Austin Sur., 1,200 ft. N and W of 1,200-ac. farm.....Shut down 3,120 ft.

Todor Oil Corp.'s No. 1 H. Zaesch, in the J. Meeks Sur., 150 ft. N and 900 ft. W of S. Meeks Sur.....Shut down 2,050 ft.

LIVE OAK COUNTY

O'Neil & Catlett No. 1 Smith, 900 ft. SW line, 150 ft. NW line.....Drlg. in shale 3,420 ft.

Dr. J. K. Rowan Co.'s No. 1 Lynne Ranch, 171 ft. W of George West.....Location.

Simmons Oil Co.'s No. 1 Richard Coquat, in James C. Hill Sur., 2,250 ft. to S line, 1,750 ft. to E line, 7 miles NE of Oakville.....Drlg. in shale 1,560 ft.

MAVERICK COUNTY

Rycade Oil Corp.'s No. 4 J. M. Chittim.....T. D. 5,645 ft.; drlg. in brown lime.

Rycade Oil Corp.'s No. 5 Chittim.....T. D. 2,010 ft.; drlg. in lime; produced a total of 1,500 bbls. from Eagleford at 1,500 ft.; pumped dry.

Rycade Oil Corp.'s No. 3 Chittim, Blk. 7, Sur. 116, H.& G.N., 175 ft. N of No. 1, 10 ft. W, 255 ft. S line.....T. D. 6,175 ft.; drlg. in lime producing 40 bbls. light oil, 8,000,000 ft. gas.

The Texas Company, 5 miles west Darling Switch.....T. D. 4,512 ft.; drlg. in lime; set 3,800 ft. of 8¼-in. csg.

Thomas & Johnson's No. 1 Wipff, in the de Garcia Sur., 150 ft. N and 350 ft. E Sec. 7, Blk. 19.....T. D. 1,500 ft.; shut down.

MEDINA COUNTY

Pan American Petroleum Co.'s No. 1 Harrison, Sur. 799..Rigging up.

Pat Armstrong's No. 1 C. W. Butts in George C. Hanson Sur.....T. D. 974 ft.; coring Anacacho.

Donaldson Oil & Dev. Co.'s No. 2 Adams Co., James Hillemmeyer No. 25 Sur., 500 ft. to E line of survey, 150 ft. to S line of N half of survey.....Derrick timbers on ground.

T. N. T. Drilling Co.'s No. 1 V. Mangold, I. S. Palmer Sur. No. 20, SE cor., 1 mile from Noonan.....T. D. 1,230 ft.; shut down in Austin chalk.

Cecil Switzer's No. 1 Zerr, 6 miles west of Hondo.....T. D. 3,710 ft.; sidetracked tools and set liner; drlg. in Pennsylvanian.

R. C. Hill's No. 1 A. Wuezbach, G. Arcola Sur., 500 ft. E line, 600 ft. S line.....Location.

Carl Brothers' No. 1 Saathoff, A. Smelzer No. 19 Sur.....Dropped from reports until work is resumed.

MILAM COUNTY

Service Oil & Gas Co.'s No. 1 Muldrow, L. Taylor Sur., SE cor.....Location.

Hill & Bonwell's No. 1 B. Booker, James Welch Sur.....Fishing 2,020 ft.

Lloyd Oil Corp.'s No. 1 San Clement, Fokes Sur.....Spudded in.

A. H. Wray's No. 1 D. D. Fowler.....T. D. 1,688 ft.; sidetracked 360 ft. of drill pipe lost in hole; now drlg.

McMULLEN COUNTY

Sun Oil Co.'s No. 1 Berry, J. Poitevent Sur. No. 9.....Drlg. in shale and alternating gumbo at 2,020 ft.

Cowboys Oil Co.'s No. 1 Shiner, H. M. Brewer Sur.....T. D. 2,280 ft.; shut down.

NUECES COUNTY

H. Grimm et al's No. 1 A. R. Roberts, Blk. 79, Winter Vegt. Garden Subd., 6 miles NW of Robstown, 12 miles NE Agua Dulce Field.....T. D. 2,675 ft.; drlg. in shale.

SAN PATRICIO COUNTY

LaFeria Oil & Gas Co.'s No. 1 C. C. Smith in J. C. White Sur., 690 ft. to N line, 350 ft. to E line.....Drlg. in shale 2,250 ft.

STARR COUNTY

The Texas Company's No. 4-A V. G. Guerra, Porcion 67, Share 305-D.....T. D. 3,590 ft.; standing 2,300 ft. in oil, 35 gravity.

Adams, Scanlon, Scanlon & Wright's No. 1 Margo, Por. 71, Jurisdiction of Mier, 1,921 ft. W line, 430 ft. N line.....Drlg. 27 ft.

Smith & Adams' No. 1 Welch, Pedernal Sur.....Drlg. 631 ft.; set 8-in. csg. at 440 ft.

WEBB COUNTY

Everett Suladie's No. 1 Bruni, Sur. 131, 150 ft. S line, 150 ft. W line of NW of SE.....Drlg. 2,070 ft.

UVALDE COUNTY

Waldron & Welch's No. 1 H. S. Benson, 2 miles NW of Uvalde.....T. D. 700 ft.; drlg. in Edwards.

Phantom Oil Co.'s No. 1 Claudt, Sur. 661.....Building derrick.

WILLACY COUNTY

Weimer—Richardson's No. 1 Elmore.....T. D. 1,860 ft.; shut down in gumbo.

WILLIAMSON COUNTY

Harlem et al's No. 1 H. H. Stiles, in the J. Bevil Sur., 220 ft. N and 330 ft. E of Sur.....Rigging up.

Powell & Kydendall's No. 1 Christian Mager in the W. Byerly Sur., 150 ft. N and 450 ft. E of farms of 150 acres.....Shut down 1,501 ft.

WILSON COUNTY

R. M. Sherer's No. 1 Tummilson, A. Trevena Sur.....Dropped from reports until work is resumed.

Tidal Oil Co.'s No. 1 Felix Kulesza, Susanna Larrison Sur., 235 ft. to E line, 1,320 ft. to S line of 647-ac. tract.....Drlg. in Del Rio 3,025 ft.

Trinity Drillers' No. 1 Richter, in Trevino Sur., 3,005 ft. to E line, 250 ft. to N line of 58-ac. lease.....T. D. 2,940 ft.; drlg. in shale; set 1,250 ft. 10-in. csg.

Rycade Oil Corp. et al's No. 1 George Hice, Juan Delgado Sur., 650 ft. W of Cibolo River, 150 ft. SE line of tract.....Set surface csg.

Grayburg Oil Co.'s No. 1 Tigler, Parrot Sur.....T. D. 3,396 ft.; temp. shut down.

R. M. Sherer's No. 1 First State Bank of Stockdale, Moran Sur.....Dropped from reports until work is resumed.

ZAPATA COUNTY

R. F. Blankenship's No. 1 G. T. Montemeyer, Sur. 45, Blk. 7, 150 ft. N and E lines.....Tested about 5 gals. oil each bailer.; T. D. 1,321 ft.

O. W. Killam's No. 1, J. G. Martinez Sur. No. 2, 550 ft. W line, 150 ft. S line of SE of survey.....T. D. 600 ft.; standing W. O. water.

Magnolia Petroleum Co.'s No. 3 F. G. Martinez Sur. No. 6, 660 ft. N line, 660 ft. E line of W half of survey..T. D. 1,872 ft.; sand at 1,872 ft., tested gas through tester, W. O. C.

John Pappas' No. 2 Cuellar, Por. 33 and 34.....T. D. 1,720 ft.; drlg. sand 1,690-1,700 ft.; tested dry.

National Oil Co.'s No. 1 D. B. Adams.....T. D. 670 ft.; resumed drilling; showing considerable gas.

ZAVALA COUNTY

Tritex Oil Co.'s No. 1 Clay Burns.....T. D. 780 ft.; standing.

Chicago Merchants Produce Co.'s No. 1 Fee, 1 mile E of La Pryor.....Drlg. 1,000 ft.

Tritex Oil Co.'s No. 2 Childress, one-fourth mile NW of old Dominion Co.'s No. 1 Pryor.....Drlg. 650 ft.

Weigand Brothers' No. 1 W. L. Gates, Hooper & Wade Sur. No. 13, 1,320 ft. S of N line, 1,220 ft. W of NE cor. survey, about 16 miles S of Batesville.....Spudding in.

Jack Baldwin's No. 1 J. R. Price, in the W. E. Erskin Sur. No. 34 .....Spudded in and shut down.

Southern Crude Oil Purch. Co.'s No. 1 Nat M. Washer in the T. Pinckhardt Sur. No. 180, 1 deg. E, 6,795 ft. from SE cor. .....Location.

Texas Gas & Fuel Co.'s No. 2 West in the W. Zuniga Sur. .....T. D. 1,818 ft.; shut down; estimated 4,000,000 ft. gas; hole full salt water.

Texas Gas & Fuel Co.'s No. 3 West in the W. Zuniga Sur., 3,000 ft. from S line, 6,700 ft. from W line.....Drlg. 150 ft.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 64)

BOSSIER PARISH—ELM GROVE

La. Gas & Fuel Co.'s No. 2 Murff, 1,980 ft. S, 660 ft. W, NE cor., Sec. 24-17-12 .....Cmtd. 9-in. 879 ft.

La. Gas & Fuel Co.'s No. 4 Thigpen & Herold, 660 ft. N, 660 ft. W, SE cor., Sec. 12-17-12 .....Drlg. shale 1,610 ft.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1-A Agurs, 819 ft. S, 157 ft. E, NW cor. SW, Sec. 7-16-16 .....Cmtd. 6⅝-in. 2,800 ft; to test show gas.

Eastern Carbon Co.'s No. 1 Z. Abney, Sec. 8-17-16 .....Cmtd. 6⅝-in. 2,735 ft; T.D. 2,749 ft.

CADDO PARISH—HOSSTON

Bayou State Oil Corp.'s No. 28 Jolly, 500 ft. N, 150 ft. W, SE cor. NE, Sec. 22-22-15 .....W.O.S.R. 1,004 ft.

Bayou State Oil Corp.'s No. 29 Jolly, 425 ft. W, 775 ft. N, SE cor. NE .....Began drlg. Dec. 12; cmtd. 10-in. 41 ft; drlg. 420 ft.

Bayou State Oil Corp.'s No. 18 Levee Board, 450 ft. N, 150 ft. E, SW cor. NW, Sec. 23-22-15 .....W.O.S.R; T.D. 1,003 ft.

CADDO PARISH—DIXIE

Sam Gold's No. 3 Hunter, 660 ft. N, 660 ft. W, SE cor. SW NE, Sec. 17-19-14 .....200 ft. oil and S.W. in hole 2,457 ft; W.O.S.R; topped broken sand 2,415 ft.

Gulf Ref. Co.'s No. 6 Oden, 660 ft. S, 660 ft. W, NE cor., Sec. 18-19-14 .....Cmtd. 6⅝-in. 2,380 ft; drilled to 2,444 ft; plugged back to 2,423 ft.

Lide et als' No. 1 Dickson heirs, 795 ft. N, 200 ft. E, SW cor., Sec. 10-19-14 .....Rig up.

The Texas Co.'s No. 2 Sentell, 990 ft. N, 272 ft. E, SW cor., Sec. 9-19-13 .....Began drlg. Dec. 1; cmtd. 10-in. W.O.S.R; 2,440 ft.

CADDO PARISH—OIL CITY

Gulf Ref. Co.'s No. 22-A Levee Board, 1,126 ft. S, 1,100 ft. E, NW cor. NE, Sec. 34-21-16 .....Rigging up.

Magnolia Pet. Co.'s No. 19 Doan-Thigpen, 330 ft. N, 990 ft. W, SE cor., Sec. 6-20-15 .....Cmtd. 6⅝-in. 1,287 ft; T.D. 3,051 ft.

P. T. Mize's No. 1 La. O. R. Corp., 445 ft. N, 100 ft. E, SW cor. SE, Sec. 1-20-16 .....Derrick.

The Texas Co.'s No. 72 Levee Board, 725 ft. N, 210 ft. E, SW cor. SE, Sec. 27-21-16 .....Rigging up.

Thompson & Fitzsimmons' No. 1 Howell, 600 ft. S, 300 ft. W, NE cor. SE, Sec. 13-22-16 .....Began drlg. Dec. 12; cmtd. 12½-in. 175 ft; drlg. 300 ft.

CADDO PARISH—VIVIAN DISTRICT

Oilfields Expltn. Co.'s No. 15 Caldwell, 810 ft. S, 810 ft. E, NW cor., Sec. 29-22-15 .....Location.

PINE ISLAND

E. W. McGoldrick's No. 1 Dreyfuss-Lane, 515 ft. N, 300 ft. E, SW cor. NE, Sec. 15-21-15 .....Cmtd. 10-in. 40 ft; 6-in. 1,510 ft; W.O.S.R; 1,700 ft.

Shreveport Oil Corp.'s No. 3 Hicks et al, 420 ft. S, 450 ft. W, NE cor. NW, Sec. 32-21-15 .....Began drlg. Dec. 4; cmtd. 10-in. 104 ft; drlg. 1,530 ft.

CLAIBORNE PARISH—HOMER

Oakes et als' No. 1 Richardson, NE SE, Sec. 19-21-17 ...S.D. 1,700 ft.

LA SALLE PARISH—URANIA

Ark. Fuel Oil Co.'s No. 5 Urania, 200 ft. S, 200 ft. E, NW cor. NE SE, Sec. 24-10-1e .....Drlg. 3,700 ft.

Kinney, Hardtner & Randall's No. 1 Kinney, SW SW, Sec. 7-10-2e .....S.D. 1,570 ft.

Philp et als' No. 1 Urania, SE cor. NE NE, Sec. 1-10-1e...Tested 500,000 ft. gas and sanded up; C.O; setting liner to test; T.D. 730 ft.

Randall et als' No. 3 Urania, Sec. 1-10-1e .....S.D. 675 ft.

Trio Oil Co.'s No. 2 Urania, NE cor. SW SW NW, Sec. 19-10-1e .....Rigging up.

MOREHOUSE PARISH

J. S. Herkness' No. 12 Bowles, 3,392 ft. E, 3,300 ft. S, NW cor., Sec. 18-20-5 .....Drlg. shale and boulders 1,780 ft.

Magnolia Pet. Co.'s No. 6 U. S. Govt., 490 ft. N, 254 ft. W, SE cor., Lot 2, Sec. 33-21-5 .....Tested estimated 4,000,000 ft. gas 2,245 ft; coring 2,364 ft.

Magnolia Pet. Co.'s No. 7 U. S. Govt., 250 ft. N, 45 ft. W, SW cor. Lot 2, Sec. 33-21-5 .....Drlg. 2,253 ft.

Southern Carbon Co.'s No. 14 Tensas, Sec. 34-21-4 .....Rigging up.

United Carbon Co.'s No. 2 Patton, 660 ft. N, 660 ft. E, SW cor. SE, Sec. 2-20-4 .....Location.

United Carbon Co.'s No. 3 Patton, 660 ft. W, 660 ft. S, NE cor. SE, Sec. 2-20-4 .....Location.

OUACHITA PARISH

Amalgamated Carbon Co.'s No. 2 Cole, 742 ft. E, 703 ft. S, NW cor., Sec. 43-19-4 .....Began drlg. Nov. 27; cmtd. 12-in. 185 ft; 8-in. 890 ft; drlg. 2,116 ft.

Chauvin Gas Co.'s No. 3 Slagle Johnson, 2,539 ft. S, 55 ft. E, NW cor., Sec. 47-18-4 .....Rigging up.

Chauvin Gas Co.'s No. 4 Slagle Johnson, 4,505 ft. S, 257 ft. E, NW cor., Sec. 47-18-4 .....Location.

Hope Prod. Co.'s No. 1 Fairbanks, 660 ft. N, 624 ft. E, SW cor. SE, Sec. 25-20-4 .....Cutting out liner; T.D. 2,198 ft.

Hope Prod. Co.'s No. 2 Fairbanks, 1,876 ft. E, 628 ft. N, SW cor. SE, Sec. 25-20-4 .....Location.

Hope Prod. Co.'s No. 3 Fairbanks, 1,876 ft. E, 628 ft. S, NW cor. NE, Sec. 36-20-4 .....Location.

G. E. Jordan's No. 1 Anding, NW NE, Sec. 18-18-5.....Plugging back to 2,234 ft; T.D. 2,480 ft.

La. Gas & Fuel Co.'s No. 1 Beard, Sec. 46-18-4 .....Derrick.

Magnolia Pet. Co.'s No. 2 fee 401, 660 ft. S, 660 ft. E, NW cor., Sec. 2-18-3 .....Derrick.

Magnolia Pet. Co.'s No. 4 U. S., Sec. 20-19-5; reported completed July 31, in error .....Tested 1,000,000 ft. gas at 515 lbs. rock pressure; set liner 2,528 ft; bailed dry; plugged back to 2,200 ft; estimated 500,000 ft. gas; W.O; waiting orders 2,528 ft.

Michlouzanna O. & G. Dev. Co.'s No. 1 Osterlind, 6,877 ft. S, 819 ft. W, NW cor. irregular Sec. 42-18-4 ....Drlg. 2,200 ft.

Palmer Corp.'s No. 1 Cagle, 1,964 ft. S, 476 ft. E, NW cor., Sec. 7-18-5 .....Fishing 4½-in. liner 2,175 ft; T. D. 2,463 ft.

Sho-Van Gas Products Co.'s No. 3 W. Va., 1,980 ft. S and W, NE cor., Sec. 8-18-4 .....Location.

Sho-Van Gas Products Co.'s No. 4 W. Va., 1,078 ft. N, 294 ft. W, NE cor., Sec. 49, in Sec. 7 .....Location.

Sho-Van Gas Products Co.'s No. 5 W. Va., 2,046 ft. S, 1,790 ft W, NE cor. SE, Sec. 6-18-4 .....Cmtd. 6-in. 2,154 ft.

Southern Carbon Co.'s No. 14 Fairbanks, Sec. 43-20-4....Began drlg. Dec. 12; cmtd. 12-in. 188 ft.; drlg. 455 ft.

Southern Carbon Co.'s No. 4 Phillips, 660 ft. S, 660 ft. E, NW cor., Sec. 8-19-4 .....Drlg. shale and boulders 2,006 ft.

Trousdale & Wright's No. 2 Kate Cole, 240 ft. W, 1,311 ft. S of point where N line of Sec. 42 joins dividing line of Secs. 8 and 9, in Sec. 42-18-4 .....Drlg. in; T.D. 2,139 ft.

Union Gas Products Co.'s No. 1 Hare, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 22-19-5 .....Began drlg. Dec. 13; cmtd. 12-in. 150 ft; drlg. 360 ft.

United Oil & Nat. Gas Products Co. of La.'s No. 5 Guthrie, 6,896 ft. N, 6,022 ft. W, cor. Secs. 49, 26, and 25, Sec. 49-20-5 .....Derrick.

United Oil & Nat. Gas Products Co. of La.'s No. 2 Cole, 660 ft. S, 594 ft. E, C, Sec. 26-20-4 .....Derrick.

United Carbon Co.'s No. 4 Fudicker, 660 ft. N, 660 ft. E, SW cor. SW, Sec. 15-19-5 .....Rigging up.

United Carbon Co.'s No. 5 Spade, 660 ft. N, 660 ft. W, SE cor. NE, Sec. 35-19-3 .....Location.

United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4 .....Location.

RED RIVER PARISH

Root Refineries, Inc.'s No. 1 Home State & Savings Bank, 330 ft. N, 330 ft. W, C, Sec. 8-13-10 .....Oil show 2,570 ft; drill stem test; S.W; cored sand showing gas 2,598 f.; S.D. 2,667 ft.

Triple Oil Co.'s No. 1 W. M. Pollock, Sec. 33-13-11.....Cmtd. 6⅝-in. 2,456 ft; W.O.S.R.; 2,470 ft.

RICHLAND PARISH

Ark.-La. P. L. Co.'s No. 1 A. E. Purvis, 762 ft. N, 1,180 ft. W, SE cor., Sec. 34-17-6 .....Began drlg. Dec. 17.

W. C. Feazell's No. 1 R. B. Simon, 2,406 ft. W, 2,020 ft. S, NE cor., Sec. 11-16-6 .....Rig up.

W. C. Feazell's No. 1 E. L. Wilson, 647 ft. N, 241 ft. E, SW cor. NW, Sec. 31-16-6 .....Drlg. shale and boulders 1,980 ft.

Industrial Gas Co.'s No. 1 Boughton, N 85 deg., 10 min. W, 4,458 ft., 865 ft. S, NE cor., Sec. 1-16-6 .....Cmtd. 6-in. 2,296 ft.

Nat. Gas Products Co.'s No. 1-C Sartor, 536 ft. N, 1,333 ft. E, SW cor., Sec. 21-16-6 .....Cmtd. gas blowout 235 ft; drlg. out plug.

Magnolia Pet. Co.'s No. 4 C. M. Noble, 400 ft. S, 660 ft. W, NE cor. SE NE, Sec. 35-16-5 .....Location.

M. L. Meredith's No. 1 Holdness, 1,980 ft. S, 990 ft. W, NE cor., Sec. 15-16-6 .....Cmtd. 8-in. 838 ft.

Northern La. Nat. Gas Co.'s No. 5 Boykin, 380 ft. N, 157 ft. W, SE cor., Sec. 20-17-6 .....Began drlg. Dec. 6; cmtd. 12½-in; drlg. 508 ft.

Palmer Corp.'s No. 1-A Earle, Sec. 2-16-15.....Cmtd. 6-in. 2,281 ft.

Palmer Corp.'s No. 2 Earle, 1,980 f.. N, 1,320 ft. W, SE cor., Sec. 31-17-6 .....Tested estimated 1,000,000 ft. gas 2,450 ft; drlg. 2,455 ft.

Palmer Corp.'s No. 1 Eubanks, 1,100 ft. N, 350 ft. E, SW cor. SE NW, Sec. 26-17-6 .....Tested S.W. 3,118 ft; plugged back to 2,440 ft; waiting csg. to set.

Palmer Corp.'s No. 5 Rhymes, 1,386 ft. N, 599 ft. E, SW cor., Sec. 34-17-6 .....Drlg. shale and boulders 2,064 ft.

Southern Carbon Co.'s No. 1 Hale, 660 ft. N, 760 ft. W, SE cor. Sec. 16-16-6 .....Derrick.

Southern Carbon Co.'s No. 1 S. R. Humble, 600 ft. N, 600 ft. W, SE cor., Sec. 26-16-6 .....Cmtd. 6-in. 2,280 ft.

United Carbon Co.'s No. 1 Roberts, 1,650 ft. N, 600 ft. W, SE cor., Sec. 21-16-6 .....Drlg. shale and boulders 2,441 ft.

SABINE PARISH—PLEASANT HILL

Ark. Fuel Oil Co.'s No. 3 Horne, 560 ft. N, 195 ft. E, C, Sec. 33-10-12 .....Drlg. 2,251 ft.

Bridges-Clark Oil Co.'s No. 1 J. W. Guy, 300 ft. N, 300 ft. E, SW cor., Sec. 33-10-12 .....Rigging up.

Hatcher et als' No. 1 Moore heirs, 300 ft. N, 300 ft. E, C, Sec. 32-10-12 .....Derrick.

Magnolia Pet. Co.'s No. 5 E. E. Hall, 350 ft. N, 312 ft. E, SW cor. NW SW, Sec. 33-10-12 .....Drlg. shale and boulders 2,500 ft.

Reid Clark et als' No. 2 Moore, 1,600 ft. N, 330 ft. W, SE cor., Sec. 32-10-12 .....W.O.S.R; 3,236 ft.

UNION PARISH

Bahan & Bahan's No. 3 School, 1,120 ft. N, 650 ft. W, SE cor., Sec. 10-20-3 .....Began drlg. Dec. 10; cmtd. 12½-in. 141 ft; 8-in. 771 ft.

Interstate Nat. Gas Co.'s No. 22 fee, Sec. 17-20-4 .....Drlg. in.

Interstate Nat. Gas Co.'s No. 24 fee, Sec. 33-20-3 .....Completed Dec. 14; 4,569,000 ft. gas; T.D. 2,170 ft.

Interstate Nat. Gas Co.'s No. 25 fee, Sec. 33-20-3 .....Completed Dec. 16; 4,060,000 ft. gas 2,184 ft.

Lyons Gas Co.'s No. 1 A. B. Edwards, 722 ft. W, 897 ft. S, NE cor. NW, Sec. 11-20-3 .....Setting 6-in. 2,116 ft.

United Carbon Co.'s No. 2 Reid, 1,980 ft. E, 720 ft. S, NW cor. SW, Sec. 12-20-3 .....Drlg. 1,450 ft.

WEBSTER PARISH—COTTON VALLEY

Magnolia Pet. Co.'s No. 1 McCook & Hibbler, C SW SW, Sec. 22-21-10 .....D.S. test 6,975 ft; open 2 hrs. showed 216 joints S.W. and little gas at 2,963 ft; T.D. 2,975 ft.

Ohio Oil Co.'s No. 46 Bodcaw, 660 ft. N, 660 ft. E, SW cor. SW NW, Sec. 28-21-10 .....Drlg. lime and shale 3,048 ft.

Palmer Corp.'s No. 2 Miller, 520 ft. N, 504 ft. E, SW cor. SW, Sec. 28-21-10 .....Drlg. lime and shale 4,644 ft.

Standard Oil Co.'s No. 1-E Bodcaw, 660 ft. N, 660 ft. E, SW cor. SE, Sec. 28-21-10 .....Drlg. sandy shale 3,642 ft.

Standard Oil Co.'s No. 1 Thos. Crichton et al, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 22-21-10 .....Drlg. anhydrite 4,444 ft.

WEBSTER PARISH—SAREPTA AND SHONGALOO

Bateman et als' No. 1 J. E. Womble, Sec. 1-22-11 .....Tested S.W; S.O. 5-ft. sand 2,712 ft; arranging to plug back.

Bateman et als' No. 2 Womble, 2,840 ft. S, 1,120 ft. E, NW cor., Sec. 1-22-11 .....Location.

Donohoe O. & G. Co.'s No. 1-B W. B. Roseberry, 250 ft. S, 250 ft. E, C, Sec. 19-23-9 .....Began drlg. Nov. 25; S.D. 104 ft.

Pat Hudson's No. 2 S. Gardner, 330 ft. N, 300 ft. E, C, Sec. 1-22-11 .....Drilling.

Pat Hudson's No. 1 B. L. Slack, 330 ft. W, 330 ft. N, SE cor. SW, Sec. 36-23-11 .....Rigging up.

F. E. Estes' No. 2 Pardee, 1,270 ft. W, 50 ft. S, NE cor. NW, Sec. 3-22-11 .....6-in. parted; set 5 3-16-in. 2,648 ft; 2-ft. sand; T.D. 2,656 ft.

Magnolia Pet. Co.'s No. 1 J. P. Baker, 1,120 ft. S, 225 ft. E, NW cor. SW, Sec. 35-22-11 .....O.W.D.D; arranging to deepen; completed June 4, 1928; 10⅛ M.G; T.D. 3,078 ft.

Magnolia Pet. Co.'s No. 1 C. O. Bailey, 100 ft. N, 660 ft. E, SW cor. NW NE, Sec. 29-23-9 ..... Pumping S.W. 2,758 ft.

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IN EVERY IMPORTANT FIELD

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The Largest Exclusive Wire Rope Plant in America

Magnolia Pet. Co.'s No. 2 Denman, 100 ft. N, 160 ft. W, SE cor. NE NW, Sec. 1-22-11 ..... Location.
Sarepta Oil Co.'s No. 1 L. S. Gardner, 300 f.. S, 300 ft. W, C, Sec. 1-22-11 ..... Tested S.W. and show oil; W.O. 2,719 ft.

WINN PARISH—URANIA DISTRICT

Allen Thompson et als' No. 1 Sanders, 150 ft. W, 200 ft. S, NE cor., Sec. 27-10-1e ..... Location.

ARKANSAS

JOHNSON COUNTY—CLARKSVILLE

Ark.-La. P. L. Co.'s No. 1 Patterson, 1,020 ft. S, 2,570 ft. E, NW cor., Sec. 14-10-24 ..... Cmtd. 15½-in. 300 ft; drlg. 420 ft.

NEVADA COUNTY

Roy Davis et als' No. 1 Chas. Henry, 1,120 ft. N, 1,120 ft. W, SE cor., Sec. 10-12-20 ..... Derrick.
C. F. Steele's No. 1 E. W. Groves, Sec. 21-14-20..... Shut down.

OUACHITA COUNTY—SMACKOVER

J. E. Crosbie's No. 8 Robertson, 250 ft. S, 200 ft. W, NE cor. SW NW, Sec. 25-15-16 ..... Cmtd. 6-in. 2,008 ft; W.O.S.R; 200 ft. fluid in hole; T.D. 2,052 ft.
L. H. Hamilton's No. 1 Arnold & Doyle, SE SE, Sec. 23-15-16 ..... Waiting on power, to pump; T.D. 2,010 ft.
Marine Oil Co.'s No. 7-A Hayes, Sec. 4-16-15 ..... W.O.S.R; 450 ft. oil; 20-ft. sand; T.D. 2,362 ft.
Simms Oil Co.'s No. 5 Johnson, 301 ft. N, 250 ft. W, SE cor. NE SE, Sec. 34-15-15 ..... Drlg. 6-in. plug 1,957 ft.
Southern Prod. Co.'s No. 2-A Wat.s, NW cor. SW SE, Sec. 27-15-15 ..... Cmtd. 6⅝-in. 2,056 ft.
Standard Oil Co.'s No. 13 Arnold, 200 ft. S, 200 ft. E, NW cor. NE NE, Sec. 26-15-16 ..... Drlg. 1,988 ft.
Standard Oil Co.'s No. 10 Powell, 200 ft. S. 160 ft. W, NE cor. NW, Sec. 34-15-15 ..... Began drlg. Dec. 13; cm.d. 10-in. 85 ft.
J. D. Wingfield's No. 1 Martin, SW cor., Sec. 26-15-15 .. Set 6⅝-in. 2,085 ft; tested little oil and S.W; W.O; T.D. 2,115 ft.

OUACHITA COUNTY—STEPHENS

La. Oil Ref. Corp.'s No. 1 Green, 330 ft. S. 330 ft. E, NW cor., Sec. 22-15-19 ..... Cmtd. back to 2,240 ft; prod. 500 bbls. S.W and some oil; T.D. 2,494 ft.

UNION COUNTY—CHAMPAGNOLLE

Magnolia Pet. Co.'s No. 1 Schmidt, 300 ft. N, 300 ft. W, SE cor. NW SW, Sec. 5-17-14 ..... Plugged back to 2,713 ft; T.D. 3,226 ft; tested S.W; reaming at 2,718 ft; T.D. 3,226 ft.
Marine Oil Co.'s No. 3-A Thompson, Sec. 10-18-13 ..... Arranging D.S. test; sand 3,202-14 ft.

UNION COUNTY—EL DORADO

H. L. Hunt's No. 6 Pratt, 150 ft. N, 330 ft. E, SW cor. NE NE, Sec. 7-18-15 ..... Drlg. 1,975 ft.
Rice et als' No. 1 W. Ralty, 150 f. S. 150 ft. E. NW cor. SW, Sec. 7-17-15 ..... Spudded July 18; cmtd. 10-in. at 92 ft.
Weisinger et als' No. 1 Lacy, 181 ft. S, 557 f. W. NE cor. NW, Sec. 6-18-15 ..... Derrick.
Wilson & Chapman's No. 1 Thompson, 150 ft. N, 330 ft. W, SE cor. NW NW, Sec. 4-17-15 ..... D.S. test 2,137-50 ft; S.W.

UNION COUNTY—SMACKOVER

Ark. Fuel Co.'s No. 5 Alphin, Sec. 11-16-16 ..... O.W.D.D; perforated csg. 1,960-70 ft; swbd. dry; filled up 40 ft. oil in hour; W.O.
Lion Oil Ref. Co.'s No. 1 James, CWL, Lot 2, NW, Sec. 6-16-15 ..... S.D; W.O; 2,018 ft.
Root Refineries, Inc.'s No. 8 Calloway, 510 ft. S. 150 ft. W, NE cor., Sec. 4-16-15 ..... Tested dry 2,005 ft; cored shale 2,278 ft.
Skelly Oil Co.'s No. 8-A Alphin, 1,320 ft. S, C, Sec. 24-16-16 ..... W.O.S.R. 2,116 f.

EAST TEXAS

PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 9 Werner, 1,750 ft. S. 1,052 ft. W, NE cor. E. F. Mitcheson Sur. ..... Location.
Ark.-La. P. L. Co.'s No. 10 Werner, 250 ft. S, 132 ft. W, NE cor. 15-ac. Werner tract in E. S. Mitcheson Sur. ..... Cmtd. 5 3-16-in. 2,280 ft.
Ark.-La. P. L. Co.'s No. 11 Werner, 1,850 ft. S, 1,052 ft. W, NE cor. E. F. Mitcheson Sur. ..... Location.
S. H. Gardner's No. 5 Brumble, 5,966 ft. E, 4,132 ft. S, NW cor. B. C. Jordan Sur. ..... S.D. for wtr; T.D. 1,000 ft.
S. H. Gardner's No. 4 Rocquemore, 5,176 ft. E, 4,432 ft. S, NW cor. B. C. Jordan Sur. ..... Rigging up.
Magnolia Pet. Co.'s No. 1 D. W. Scott, 640 ft. N, 660 ft. E, SW cor. Scott tract in S. Lawless Sur. ..... Drlg. 3,211 ft.
Magnolia Pet. Co.'s No. 5 G. C. Tiller, 1,114 ft. W. 363 ft. N, SE cor. Jane Thorpe Sur. ..... D.S. test 3,186 f.; 5,000,000 ft. gas; arranging to cmt. csg.
Magnolia Pet. Co.'s No. 6 G. C. Tiller, 393 ft. S, 1,990 ft. E, NW cor. Jane Thorpe Sur. ..... Derrick.
Nat. Gas Prod. Co.'s No. 8 Roquemore, B. C. Jordan Sur... O.W.D.D; drlg. 2,785 ft.
Na.. Gas Prod. Co.'s No. 10 Roquemore, B. C. Jordan Sur. ..... Began drlg. Oct. 20; cmtd. 10-in. 42 f.; drlg. 1,750 ft.
Nat. Gas Prod. Co.'s No. 11 Roquemore, B. C. Jordan Sur. ..... Drlg. 650 ft.
Nemours Corp.'s No. 3 G. W. Brumble, 200 ft. N, 200 ft. E, SW cor. of lease, in E. F. Mitcheson Sur. .... Began drlg. Dec. 1; cmtd. 10-in. 60 ft; drlg. 2,200 ft; Nos. 1 and 2 drilled by J. H. Askew.
D. Thompson's No. 4 Tiller, Jas. Story Sur. ..... Location.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 64)

DE SOTO PARISH

Benedum & Trees Oil Co.'s No. 1 Johnson, 300 ft. S, 300 ft. W, NE cor., Sec. 7-11-13 ..... Derrick.
Benson Oil Co.'s No. 1 Harris, Sec. 6-10-13 ..... Arranging to cmt. 6⅝-in. to test 8-f.. sand showing gas; T.D. 3,-059 ft.
Benson Oil Co.'s No. 1 Hill, 1,345 ft. S, 1,200 ft. W, NE cor. Sec. 4-10-13 ..... Coring sand 3,104 ft.
Magnolia Pet. Co.'s No. 1 Anna Mason, 990 ft. S, 990 ft. E, NW cor. SW Sec. 27-12-11 ..... Drlg. 3,098 ft.
R. O. Roy's No. 1-B Farmer, 660 ft. S, 660 ft. E, NE SW, Sec. 5-13-13 ..... Derrick.
R. O. Roy's No. 1-E Farmer, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 5-13-13 ..... Drlg. 550 ft.

FRANKLIN PARISH

Davis et als' No. 1 Moore, 600 ft. W, 200 ft. S, NE cor. Sec. 13-11-6 ..... S.D. 1,430 ft.
Franklin Oil & Gas Co.'s No. 1 T. J. O'Brien, 990 ft. N, 990 ft. E, SW cor. NW Sec. 17-15-9 ..... Cmtd. 15½-in. 208 ft.

LA SALLE PARISH—WHITE SULPHUR DISTRICT

Tunica Pet. Co.'s No. 53 L. & A., 660 ft. N, 660 ft. W, SE cor., Sec. 17-7-3e ..... Drlg. shale 1,497 ft.

MOREHOUSE PARISH

J. P. White's No. 1 Chess-Wymond, Sec. 12-19-4 ..... Tested S.W. 3,025 ft.; W.O.

NATCHITOCHES PARISH

S. D. McDaniel's No. 1 Clark & Morse, 990 ft. E. 350 ft. N, C, Sec. 23-5-6 ..... Tested 1,000,000 ft. gas and S.W. 3 ft.; S.D. for orders; T.D. 2,-536 ft.
Nichols & Wilder's No. 1 Clark, 150 ft. W, 250 ft. N, SE cor. Sec. 10-10-8 ..... S.D. 2,110 ft.
Robeline O. & G. Co.'s No. 1 Winn, 558 ft. N, 348 ft. E, SW cor. SE, Sec. 7-8-9 ..... Cmtd. 10-in. 16 ft; drlg. shale and boulders 800 ft.

OUACHITA PARISH

J. L. Bullock, trustee's No. 1 West Va. Lbr. Co. N½ NE, Sec. 25-18-5 ..... Drlg. sandy gumbo 2,482 ft.

RAPIDES PARISH

Ayers Bros.' No. 1 Wickliff, 2,790 ft. N, 150 ft. E, SW cor. Sec. 9-5n-2e ..... Drlg. rock 2,506 ft.

RED RIVER PARISH

W. D. Ball's No. 1 Krumholtz, 660 ft. S, 660 ft. S, NW cor. Sec. 32-14-10 ..... Drlg. gumbo 1,465 ft.
Benedum & Trees Oil Co.'s No. 1 Franklin Realty Co. 350 ft. E, 350 ft. S, NW cor. Sec. 29-11-9 ..... Plugging back to make test for gas at 2,960 ft; drilled to 3,017 ft; tested 1,000,000 ft. gas, 1,-500 ft. S.W. and set drill stem with packer.
Eylers O. & G. Co.'s No. 1 Johnson, 500 ft. N, 500 ft. W, SE cor. SW Sec. 17-12-10 ..... Drlg. 2,050 ft.
LeGrande et als' No. 1 Sample, Sec. 11-14-11 ..... Rigging up.
D. H. Riddick's No. 1 Johnson, 500 ft. N, 500 ft. W, SE cor. Sec. 17-12-10 ..... S.D. 1,050 ft.; laying gas line.

RICHLAND PARISH

Richland O. & G. Co.'s No. 1 Singleterry, 1,980 ft. N, 660 ft. W, SE cor., Sec. 20-18-7 ..... S.D. 970 ft.
Austin & McDonald's No. 1 Hunt, 594 ft. N, 660 f.. E. SW cor Section 13-17-5 ..... Derrick.
Austin & McDonald's No. 2 Millsaps, SW cor. Sec. 17-17-6 Waiting orders; T.D. 2,679 ft.
Austin & McDonald's No. 3 Millsaps, 1,980 ft. S, 660 ft. E. NW cor. Sec. 16-17-6 ..... Tested S.W.; W.O. 2,477 ft.
Austin & McDonald's No. 4 Millsaps, NW cor., Sec. 16-17-6. Location.
Austin & McDonald's No. 5 Millsaps, 2,640 ft. N, 1,320 ft. W, SE cor. Sec. 8-17-6 ..... Derrick.
W. C. Feezel's No. 1 Landrum, 620 ft. N, 4,573 ft. E. SW cor. Sec. 6-16-7 ..... Derrick.
Industrial Gas Co.'s No. 1 T. R. Hodge, 3,259 ft. E, 1,-320 ft. S, C, Sec. 7-16-7 ..... Tested dry 2,490 ft; arranging to deepen.
Industrial Gas Co.'s No. 1 A. T. Davidson, 1,856 ft S, 916 ft. E, NW cor. Sec. 6-16-7 ..... Tested dry 2,468 ft; arranging to deepen.
Industrial Gas Co.'s No. 1-A Jack Davidson, N 1de-gree W, 1,094 ft. S, 2,501 ft. E. NW cor. Sec. 6-16-7 ..... Tested dry 2,475 ft; arranging to deepen.
Industrial Gas Co.'s No. 1 Rus.on Drlg. Co., 1,980 ft. S, 1,955 ft. E, NW cor. Sec. 7-16-7 ..... Drlg. shale and boulders 2,330 ft.
Palmer Corp.'s No. 2 Miles, 723 ft. E, 660 ft. S, NW cor. NE, Sec. 12-17-6 ..... Cmtd. 6-in. 2,315 ft.
Shreveport Contractors, Inc.,s No. 1 Buie, 600 ft. E, 400 ft. N, SW cor. Sec. 17-15-7 ..... S.D.; shale and boulders 2,527 ft.
Triangle Drlg. Co. and Woodley Pet. Co.'s No. 1 G. L. Cumpton, 660 ft. S, 660 ft. W, NE cor. NW SE. Sec. 16-17-7 ..... Pulling 9-in. csg; T.D. 2,303 ft.
Woodley Pet. Co.'s No. 1 Buie, 660 ft. N, 1,980 ft. E, SW cor. Sec. 32-18-7 ..... Drlg. 2,420 ft.

SABINE PARISH

Bridges-Clark Oil Co.'s No. 1 Gay et al, 300 ft. S, 300 ft. E, NW cor. NE NW, Sec. 3-9-12 ..... Rigging up.
R. L. Gay, trustee's No. 6 Bowman Hicks, 900 ft. N, 800 ft. W, SE cor. NW SE Sec. 14-7-14 ..... Rigging up.
R. L. Gay, trustee's No. 2-A Bowman-Hicks Lbr. Co., 200 ft. S, 200 ft. W, NE cor. NE NW ..... Rigging up.
R. L. Gay, trustee's No. 1 Long-Bell Lbr. Co.. NE cor. NW NW Sec. 26-8-14 ..... Reaming to bottom; T.D. 3,614 ft.
R. L. Gay, trustee's No. 3 Sabine Lbr. Co., 1,120 ft. N, 200 f.. E, SW cor. Sec. 13-7-14 ..... Began drlg. Dec. 13; cm.d. 12½-in. 100 ft.
G. M. LeGrand's No. 1 A. C. Haley, 1,020 f .. 3,300 ft. E. NW cor. Sec. 6-7-12 ..... Began drlg. Dec. 13; cmtd. 10-in. 200 ft; drlg. 550 ft.
Ohio Oil Co.'s No. 1 Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. NW SW, Sec. 35-8-12 ..... Derrick.
Ohio Oil Co.'s No. 2 Bowman-Hicks, 330 ft. N, 330 ft. W, SE cor. SE SW, Sec. 33-8-12 ..... Derrick.
Olsen Brothers' No. 1 Keeler, SW cor. SW SE Sec. 27-8-12. Began drlg. Dec. 10; cmtd. 12½-in. 100 ft; drlg. 1,425 ft.
D. H. Riddick's No. 1 Scretchfield, 400 ft. E. 400 ft. N, SW cor. NW SE Sec. 18-9-12 ..... Drlg. chalk 1,729 ft.
Sabine O. & G. Co.'s No. 1 Anderson, 200 ft. N. 200 ft. E SW cor. SW NW Sec. 19-18-13 ..... Cmtd. 6⅝-in. 2,174 ft; tested dry, no show 2,216 ft.
A. H. Tarver's No. 1 Long-Bell, 330 ft. S, 330 ft. E, NW cor. SW NW, Sec. 29-8-13 ..... Tested dry; small show oil and gas W.O.; 3,625 ft.

UNION PARISH

Fred Stovall's No. 1 Stovall, 1,320 ft. E, 350 ft. N, SW cor. Sec. 32-23-4 ..... Rig up.

WEBSTER PARISH

F. M. Fuller's No. 1 Monzingo, 200 ft. N, 200 ft. W, SE cor. Sec. 27-18-8 ..... Began drlg. Nov. 10; cmtd. 10-in. at 62 ft.
Paul C. Warren et als' No. 1 Martin, 305 ft. N. 212 ft. E. SW cor. Sec. 20-20-9 ..... Drlg. 1,800 ft.

WEST CARROLL PARISH

Palmer Corp.'s No. 1-A Marston, 1,320 ft. S, 89 deg.. 35 min. W, 1,320 ft. of SE cor., Sec. 11-19-10 ..... Derrick.

ARKANSAS

ASHLEY COUNTY

Ark. Fuel Oil Co.'s No. 1 Crossett Lbr. Co., 330 ft. E, 330 ft. S, NW cor. Sec. 1-19-7 ..... Coring hard blue shale 2,638 ft.
J. G. Marcum, trustee's No. 1 McGarry, 300 ft. W, 100 ft. S, C Sec. 9-19-4 ..... Tested dry 3,300 ft.; W.O.

CLARK COUNTY

Wm. Henry, trustee's No. 1 Clark, Sec. 34-9-21 ..... S.D. 1,200 ft.

CLEBURN COUNTY

Cosden Oil Co.'s of Ark.'s No. 1 Donophan, 100 ft. S, 660 ft. E, NW cor. SW SE Sec. 19-9-10 ..... Cmtd. 15½-in. 437 ft; straightening hole to 470 ft; T.D.

COLUMBIA COUNTY

Parker and others' No. 1 Franks, 330 ft. S, 330 ft. W C Sec. 25-19-22 ..... Drlg. shale 2,737 ft.
Williams et als' No. 1 Fullenwider, 200 ft. N, 600 ft. E. SW cor. NE SE, Sec. 12-17-22 ..... Location.

DREW COUNTY

McClintock & Goodka's No. 1 Ogles, 920 ft. W, 400 ft. S, NE cor., Sec. 35-13-5 ..... O.W.D.D; rptd. junked and abd. at 2,575 ft. Aug. 30, 1928; resumed drlg. Nov. 15, 1929; pulled 1,740 ft. drill stem; milled csg.; drlg. 1,730 ft.

FAULKNER COUNTY

Gold Creek Oil & Gas Co.'s No. 2 Stermer, SE cor. NW SE Sec. 17-4-13 ..... Began drlg. Dec. 12.

GARLAND COUNTY

Givens et als' No. 1 Garrett, 660 ft. S, 660 ft. W, C Sec. 1-3-19 ..... Drlg. 3,388 ft.

GRANT COUNTY

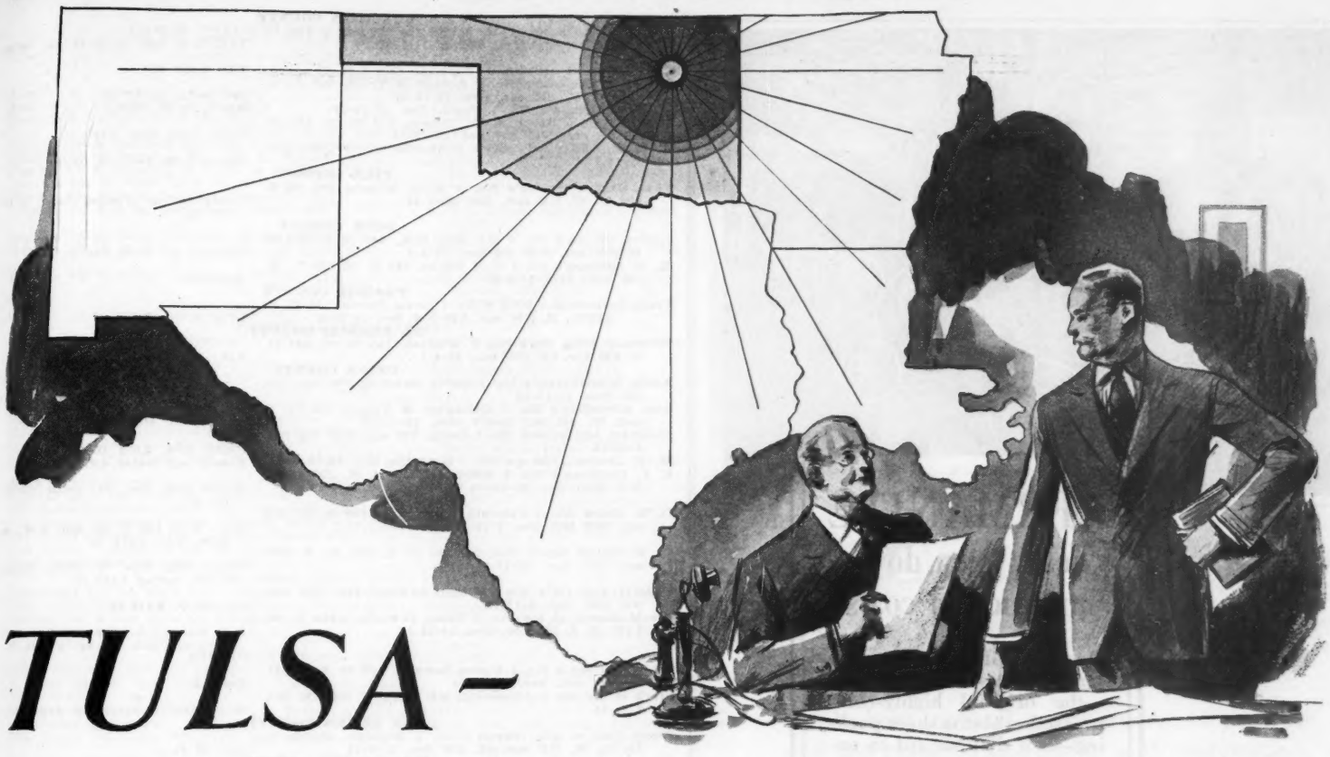
Jones & Watkins' No. 1 Meek, Sec. 5-4-11 ..... S.D. 1,400 ft.

LITTLE RIVER COUNTY

A. L. Buck's No. 1 Greason, NW NW, Sec. 25-12-32 .. Cored 4-ft. sand 2,034 f.; W.O.
McDonald & Shaw's No. 1 W. E. Black, 240 ft. N, 450 ft. W, SE cor. SE NE Sec. 12-13-28 ..... S.D. 1,805 ft.

MADISON COUNTY

Phillips Pet. Co. and F. S. Craver's No. 1., C Sec. 11-14-28. Tested 250,000 ft. gas 63 ft; S.D.



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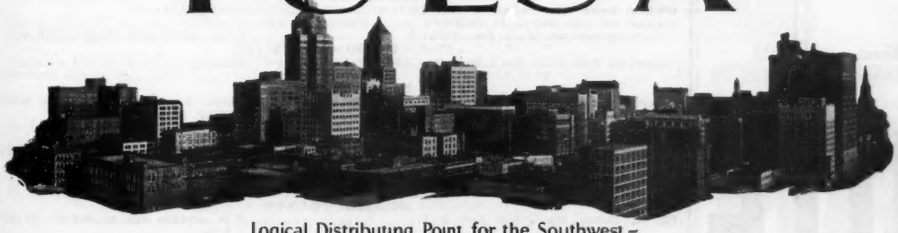

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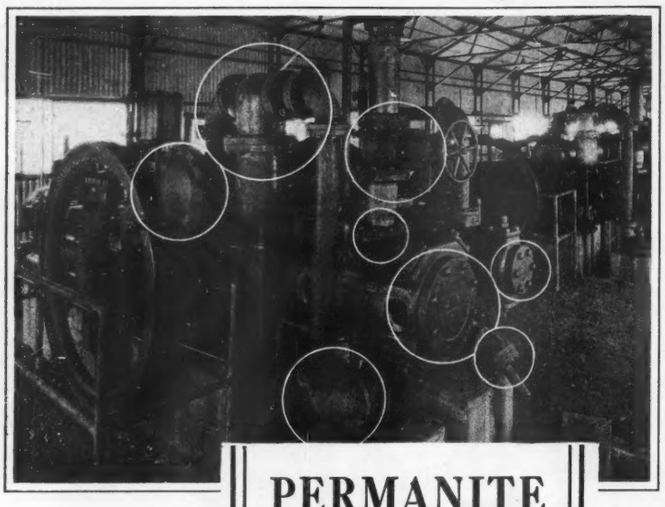

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OUACHITA COUNTY

Artex Oil Co.'s No. 1 M. V. Smith, 330 ft. S, 330 ft. E, NW cor. SE NW, Sec. 21-15-17 ..... Dry; D.S. test 2,220-36 ft; drlg. 2,245 ft.

Copenhaven et als' No. 1 Warnick, Sec. 2-15-17 ..... S.D. 2,190 ft.

Kobler & Erickson's No. 1 Rumph & Tyson, 300 ft. N, 300 ft. W, SE cor. Sec. 13-15-15 ..... Set 10-in. at 93 ft.

C. H. McDonald's No. 1 Fogle, Sec. 13-14-16 ..... S.D. 2,301 ft.; W.O.

Pure Oil Co.'s No. 1 A. A. Wilson, 330 ft. N, 330 ft. W, SE cor. NW SW Sec. 26-15-18 ..... Drlg. hard lime 2,920 ft.

A. P. Smith et als' No. 1 Reynolds, C SW NW, Sec. 21-14-17 ..... Began drlg. Dec. 14; drlg.

PIKE COUNTY

Theo. Davis, trustee's No. 1 Ruth Wilson, 200 ft. S, 200 ft. W, NE cor., Sec. 25-5-26 ..... Straightening crooked hole; T.D. 718 ft.

POPE COUNTY

Cosden Oil Co.'s No. 1 Mo. Pac. R.R., 660 ft. N, 660 ft. E, SW cor. NW SE Sec. 13-9-9 ..... Fishing for tools 750 ft.

M. W. Greeson's No. 1 C. S. Parke, 330 ft. N, 330 ft. W, SE cor. Sec. 21-8-24 ..... Location.

PRAIRIE COUNTY

Transcontinental Oil Co.'s No. 1 Louis Novak, 330 ft. E, 330 ft. N, SW cor. SW NE, Sec. 36-2n-6 ..... Drlg. 2,430 ft.

ST. FRANCIS COUNTY

Brownlee Drlg. Co.'s No. 1 Whitted, 110 ft. N, 110 ft. E, SW cor. SE NW Sec. 28-4-1 ..... S.D.; funds, 300 ft.

UNION COUNTY

Addie & Modisette's No. 1 Union Sawmill, SW cor. SW SE Sec. 25-19-12 ..... Location.

Sam Arrendale's No. 1 Gallagher & Nelson, 200 ft. N and W, SE cor. Lot 5, Sec. 18-18-17 ..... Fishing for slip; T.D. 2,268 ft.

Bredham and others' No. 1 Craig, SW cor. NW NE Sec. 6-18-15 ..... Cmtd. 6-in. 3,079 ft.

W. M. Coates, trustee's No. 1 McDuffie, Sec. 32-19-17 .... Tested salt water 4,071 ft.; W.O.

S. Y. Dorfman's No. 1 Simmons, 150 ft. N, 150 ft. E, NW SW, Sec. 13-16-15 ..... Began drlg. Dec. 15; cmtd. 10-in. 101 ft.

O. W. Estes' No. 1 Felsenthal, 330 ft. S, 330 ft. W, NE cor. NE NW Sec. 2-18-15 ..... S.D.; W.O. 125 ft. oil and S.W. in hole; T.D. 2,191 ft.

O. W. Estes' No. 1 Telford, 320 ft. S, 320 ft. E, NW cor. SW, Sec. 35-17-14 ..... Began drlg. Nov. 29; cmtd. 10-in. 42 ft; coring 2,160 ft.

Federal Pet. Co.'s No. 1 Union Sawmill fee, NW cor. NE SW Sec. 5-17-12 ..... S.D; W.O; 3,340 ft.

Joe Modisette et als' No. 2 Union Sawmill, 1,620 ft. W, 1,020 ft S, NE cor., Sec. 14-18-14 ..... D.S. test 2,195-2,235 ft; 5 joints mud and oil; cmtng. 6⅝-in 2,193 ft.

Oil Well Corp.'s No. 1 Union Sawmill, 150 ft. S, 150 ft. E, NW cor., Sec. 10-19-14 ..... Derrick.

Stark et als' No. 1 Ainsworth, NE cor. NW NE NE, Sec. 5-19-16 ..... S.D. 1,940 ft; corrected depth.

VAN BUREN COUNTY

Glenn Cole et als, trustee's No. 1 Scanlan, 200 ft. S, 200 ft. W, NE cor. SE NW Sec. 5-19-13 ..... S.D. 50 ft.

WASHINGTON COUNTY

O'Hara & Shetterly's No. 1 Boyd, SE cor. SE NE, Sec. 12-16-32 ..... Spudded Sept. 1928; S.D. 140 ft.; resumed drlg. Aug. 26; U.R.; T.D. 150 ft.

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... Drlg. 1,640 ft.

Lincoln Leaseholding Synd.'s No. 1 Lincoln, Sec. 30-15-32 ..... S.D. 1,500 ft.

WHITE COUNTY

Letona Synd.'s No. 1 Letona, SE cor. NW SW Sec. 35-9-8. Cmtng. 5 3/16-in. 3,500 ft; S.D.

EAST TEXAS

CAMP COUNTY

Rogers et als' No. 1 Enfelt, R. M. Montgomery Sur..... Tested dry 1,870 ft.; S.D.. 1,930 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossier, E. Hughhart Sur..... Drlg. 2,050 ft.

Shad Harper's No. 1 W. R. Garland, J. Wagley Sur..... S.D. 1,562 ft.

Johnson Pet. Co.'s No. 2 Randolph, Edward Dean Sur... S.D. 2,000 ft.

SHELBY COUNTY

Chapperall Oil Co.'s No. 2 Holt, Matthew Moore Sur.... S.D. for orders 3,004 ft.

MISSISSIPPI

ALCORN COUNTY

Alcorn Pet. Co.'s No. 1 Matthews, SE cor. Sec. 14-2s-7e. Jarring out 6-in. to reset at 2,430 ft; T.D. 2,735 ft.

CHICKASAW COUNTY

Hightower & Golson's No. 1 Flemming, NE cor. Sec. 20-13-3 ..... S.D; quicksand 1,340 ft.

HINDS COUNTY

Harry Gerson's No. 1 Edward House, Blk. 16, West Jackson Subd., City of Jackson, in Twp. 5n, Range 1e ..... Rig up.

Oscar Brown's No. 1 Riverside (formerly Hennessee et als') SE cor. SE SW Sec. 23-16-5 ..... Set 12½-in. 30 ft.; S.D. 1,050 ft.

Love et als' No. 1 Mayes, Sec. 2-5-1e ..... Cmtd. 10-in. 735 ft.

Mrs. Reeder et als' No. 1 State, SE cor. NW NW Sec. 25-6-1e ..... S.D. 2,895 ft.

HUMPHREYS COUNTY

E. C. Steele et als' No. 1 C. B. Box, SE cor. SE NE Sec. 35-14-4w ..... Set 12½-in. 60 ft.; S.D.

LAUDERDALE COUNTY

Lauderdale O. & G. Co.'s No. 1 Lackey, 990 ft. S and E, NW cor. NE Sec. 3-7-16 ..... Set 8¼-in. at 2,792 ft; T.D. 2,861 ft.

Meridian O. & G. Co.'s No. 1 Hauser, Sec. 33-8-18 ..... S.D. 2,696 ft.

J. R. Smith Oil Co.'s No. 1 C. F. Craig, Sec. 2-6-14 .... Derrick.

LAFAYETTE COUNTY

Banks-Goode et als' No. 1 May, 113½ rods S, 26 rods E, NW cor. SW Sec. 22-10-1w ..... Derrick.

LINCOLN COUNTY

La.-Miss Oil Co.'s No. 1 Pat Case, NE NE Sec. 21-8-6 .. Drlg. 2,060 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19 ..... Drlg. sand showing little gas; T. D. 2,858 ft.

Amory Pet. Co.'s No. 1 Hall, Sec. 8-13-19 ..... Running csg; T.D. 3,260 ft.

Park Bowser et als' No. 1 Cowart, second hole, Sec. 2-13-19 ..... S.D. 30 ft.

RANKIN COUNTY

Heme Oil Prod. Co.'s No. 1 E. P. Rainey, NW NW Sec. 13-5-1e ..... Claim show gas 2,913 ft.; recmtd. 10-in. casing for test.

WARREN COUNTY

El Dorado Oil Co.'s No. 1 Dornbush, Sec. 8-18-5 ..... S.D. 2,395 ft.

YALOBUSHA COUNTY

Phillip Bros.' No. 1 James, Sec. 20-11-5 ..... Coring 3,568 ft.

Carter Oil Co. and J. D. Collett's No. 1 Blackmur, 330 ft. S, 990 ft. W, C Sec. 14-11-4 ..... Drlg. sand and shale 1,750 ft.

YAZOO COUNTY

Amerada Pet. Co.'s No. 1 Doherty, SW SW Sec. 24-12-2.. Rigging up.

TENNESSEE

DECATUR COUNTY

Chester County Oil Co.'s No. 1 Montgomery ..... Cmtd. 6-in. 1,040 ft.; drlg. hard gray lime 1,165 ft.

ALABAMA

LAMAR COUNTY

Briggs & Knapp's No. 1 Wefel, Sec. 25-12-14 ..... Cmtd. 4⅛-in. 1,660 ft; drlg. sandy shale 1,720 ft.

MARION COUNTY

Hobson and others' No. 1 John Clark, SE Sec. 29-11-14.. Drk. pattern.

SUMTER COUNTY

B. W. Bates' No. 1 fee, Sec. 3-18-1 ..... U.R. surface csg. at 300 ft.; to set 6-in.

WASHINGTON COUNTY

S. A. Hobson's No. 1 Hobson Bros., Sec. 9-8-2 ..... S.D.; S.W. flow at 1,450 ft.

S. A. Hobson's No. 1 Wilson, Sec. 27-7-1 ..... Drlg. 760 ft.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 62)

Humble & Valley's No. 4 Woodley ..... Drlg. 1,212 ft.
Humble & Valley's No. 5 Woodley ..... Rig.
Humble & Valley's No. 6 Woodley ..... Derrick

DE WALT—FORT BEND COUNTY

Humble Oil & Refining Co.'s No. 2-C Bankers Mortgage.. Drlg. sticky shale 2,003 ft.
Humble Oil & Refining Co.'s No. 11 Brazos ..... Derrick
Humble Oil & Refining Co.'s No. 12 Brazos ..... Drlg. sandy shale 3,782 ft.
Humble Oil & Refg. Co.'s No. 9 Camp ..... Drlg. shale showing oil 3,585 ft.
Humble Oil & Refg. Co.'s No. 9 Hamner fee ..... Location.
Humble Oil & Refg. Co.'s No. 11 Sugarland ..... Comp. flowing estimated 250 bbls. oil 3,755 ft.
Humble Oil & Refg. Co.'s No. 13 Sugarland ..... Rig.
Humble Oil & Refining Co.'s No. 2-B Sugarland ..... Drlg. shell, shale and sand 3,561 ft.
Humble Oil & Refg. Co.'s No. 7 Nelson ..... Set 327 ft. screen 3,812 ft.; comp. flowing 175 bbls. oil, ¾-in. choke, first 8 hrs.
Humble Oil & Refg. Co.'s No. 8 Nelson ..... Rig.

HUMBLE—HARRIS COUNTY

Gardner Oil Co.'s No. 1 Perkins ..... Set 20-ft. screen 2,677 ft.; bailed salt water.
Humble Oil & Refg. Co.'s No. 6 Williams ..... Drlg. sandy shale 4,747 ft.
Humble Oil & Refg. Co.'s No. 7 Williams (south) ..... Testing oil sand 5,383 ft.
Humble Oil & Refg. Co.'s No. 8 Williams (south) ..... Rig
Humble Oil & Refg. Co.'s No. 9 Williams, south ..... Drlg. sticky shale 4,215 ft.
Humble Oil & Refg. Co.'s No. 10 Williams (south)..... Drlg. shale 3,892 ft.
Humble Oil & Refining Co.'s No. 2 Trahon (south) ..... Drlg. shale 3,077 ft.
South Texas Petroleum Co.'s No. 12 Morris (south) ..... Rigging up to pump 5,367 ft.
South Texas Petroleum Co.'s No. 13 Morris (south)..... Total depth 4,800 ft.; cem. 9⅝-in. casing 4,747 ft.
South Texas Petroleum Co.'s No. 2 Lee (south) ..... Drlg. shale and lime 4,100 ft.
Sun Oil Co.'s No. 3 Bender (northwest) ..... Drlg. sandy shale 3,594 ft.
The Texas Company's No. 2 Dunman, south side ..... Drlg. sticky shale 4,633 ft.
The Texas Company's No. 3 Dunman, south side ..... Cem. 9⅝-in. casing 4,505 ft.
The Texas Company's No. 4 Dunman, south side ..... Drlg. sticky shale 4,652 ft.
The Texas Company's No. 23 House ..... Bailing salt water 4,146 ft.
West Production Co.'s No. 2 Foster ..... Rig.

BLUE RIDGE—FORT BEND COUNTY

Cunningham Prod. Co.'s No. 6 Blakely (workover) ..... Rigging up to deepen 2,874 ft.
Humphreys Corp.'s No. 4 West Schenck (workover) .... Rigging to deepen.
Sinclair Oil & Gas Co.'s No. 5 Davidson (workover)..... Salt 4,439 ft.; plug to 3,389 ft.; pumping 20 bbls. oil.
E. F. Simms' No. 1 Blakely ..... Rigging.

PIERCE JUNCTION—HARRIS COUNTY

Gulf Production Co.'s No. 31 Taylor ..... Drlg. hard sand 3,137 ft.
Navarro Oil Co. and Texas Exp. Co.'s No. 11 Dooley (workover) ..... Sidetracking old hole.
Navarro Oil Co. and Humble Oil & Refg. Co.'s No. 5 Dooley (workover) ..... Drlg. sand and shale 5,285 ft.
Rio Bravo Oil Co.'s No. 11-B Settegast ..... Total depth 4,929 ft.; sidetracking 3,718 ft.
Rio Bravo Oil Co.'s No. 17-A Settegast, west ..... Fishing 4,226 ft.
Saxet Gas Co.'s No. 5 Herman (southwest) ..... Drlg. hard sand showing oil 4,063 ft.
Saxet Gas Co.'s No. 6 Herman, southwest ..... Cem. 6⅝-in. casing to test sandy shale 4,319-4,414 ft.
Saxet Gas Co.'s No. 7 Herman, southwest ..... Derrick.
Superior Oil Co.'s No. 3 B. Whitehead (workover) ... Sidetracking 3,761 ft.
Superior Oil Corp.'s No. 3 Calvert ..... Location.
Superior Oil Corp.'s No. 2 Herman, southwest ..... Drlg. hard sand 4,250 ft.
Shaw et al's No. 4-E Fitzsimmons ..... Tested salt water 4,535 ft.; milled out 4,191 ft.; waiting orders.
Smith & Plummer's No. 1 Settegast ..... Drlg. hard sand 6,022 ft.

LIBERTY—LIBERTY COUNTY

Abercrombie & Harrison's No. 4 fee (workover) ..... Comp. pumping 60 bbls. oil 3,212 ft.
Empire Gas & Fuel Co.'s No. 9 Groggan ..... Drlg. gumbo 2,991 ft.
Empire Gas & Fuel Co.'s No. 10 Groggan ..... Drlg. sandy shale 3,263 ft.
Sun Oil Co.'s No. 52 Mitchell ..... Drlg. sandy shale 3,549 ft.
Sun Oil Co.'s No. 54 Mitchell ..... Location.
The Texas Company's No. 5 Green (workover) ..... Pulling screen to deepen 3,290 ft.

HULL—LIBERTY COUNTY

Empire Gas & Fuel Co.'s No. 30 Barngrover ..... Drlg. 3,679 ft.
W. B. Flynn's No. 8 Harrison (workover) ..... Drlg. 2,433 ft.
Gulf Production Co.'s No. 50 Phoenix (workover) ..... Drlg. 4,678 ft.
Gulf Production Co.'s No. 68 Phoenix (workover) ..... Drlg. 2,066 ft.
Houston Production Co.'s No. 14 Barngrover ..... Drlg. 2,341 ft.
Humble Oil & Refg. Co.'s No. 25 Guedry ..... Derrick.
Humble Oil & Refg. Co.'s No. 11 Hooks-Spell (workover).. Drlg. 3,904 ft.
Ocean Springs Oil Co.'s No. 1-H Palmer ..... Testing oil sand 1,426 ft.
Republic Production Co.'s No. 56 Dolbear (workover) ... Comp. flowing 1,400 bbls. oil 2,662 ft.
Republic Production Co.'s No. 57 Dolbear (workover) .... Rigging up to deepen.
Republic Production Co.'s No. 63 Dolbear (workover) .... Rigged up to deepen.
Republic Production Co.'s No. 132 Dolbear (workover) ... Rigging up to pump 2,951 ft.
The Texas Company's No. 8 Hannah-Vacuum ..... Cem. 13⅜-in. casing 933 ft.

BIG CREEK—FORT BEND COUNTY

Benedum & Trees' No. 1 J. F. Ahlers ..... Derrick.
Benedum & Trees' No. 1 Moore ..... Heaving shale 4,179 ft.; washing.
Gulf Production Co.'s No. 38 Davis (workover) ..... Drlg. 4,239 ft.
Gulf Production Co.'s No. 45 Davis (workover) ..... Comp. pumping 150 bbls. oil.
The Texas Company's No. 4 fee (workover) ..... Ready to deepen 3,958 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 4 Mayes ..... Fishing drill pipe 3,396 ft.
Pure Oil Co.'s No. 6-A Mayes ..... Drlg. sand and shale showing oil 2,785 ft.
Pure Oil Co.'s No. 8 Mayes ..... Sand shale showing oil 3,086 ft.
Pure Oil Co.'s No. 9 Mayes ..... Derrick.
Pure Oil Co.'s No. 4 Lost Lake ..... Derrick.

NASH—BRAZORIA COUNTY

Rycade Oil Corp.'s No. 26 Wisdom ..... Sandy shale showing oil 5,644-58 ft.; to make drill stem test.

BATSON—HARDIN COUNTY

Ada Belle Oil Co.'s No. 130 Carlton ..... To pump 1,284 ft.
Paraffine Oil Co.'s No. 82 Paraffine ..... Comp. pumping 5 bbls. net oil 467 ft.

SOUR LAKE—HARDIN COUNTY

Austin et al's No. 1 Watson ..... Shut down 966 ft.
Lake View Oil Co.'s No. 8 Minor ..... Drlg. 1,732 ft.
Gilbert Oil Co.'s No. 107 Gilbert ..... Derrick.
E. M. Terry's No. 1 Wirt Davis ..... Drlg. 871 ft.
The Texas Company's No. 287 fee ..... Pumped dry 2,549 ft.; to deepen.
The Texas Company's No. 305 fee ..... Derrick.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 86 Cotton ..... To pump 1,118 ft.
Rio Bravo Oil Co.'s No. 86-A Cotton ..... Drlg. gumbo and shale 124 ft.

ORANGE—ORANGE COUNTY

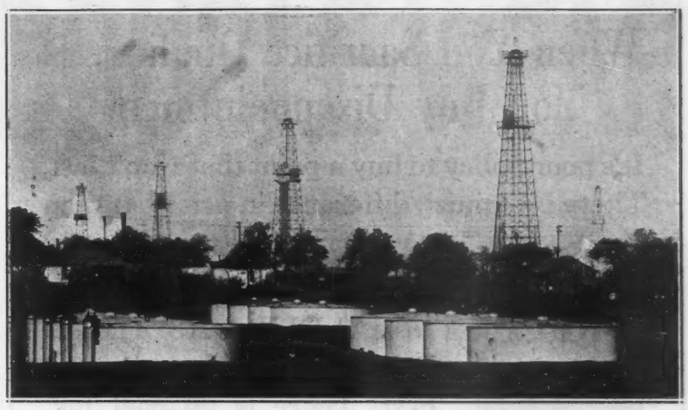
Supreme Oil Co.'s No. 3 Jackson (workover) ..... Sidetracking 3,012 ft.
Sinclair Oil & Gas Co.'s No. 5 Gailliere (workover) .... Comp. pumping 5 bbls. net oil 3,506 ft.
Sinclair Oil & Gas Co.'s No. 2 Leon (workover) ..... Rig up to deepen.

GOOSE CREEK—HARRIS COUNTY

R. J. Bradbury's No. 5 Gillette ..... No report.
Cedar Bayou Oil Co.'s No. 11 Busch ..... Bailed dry 2,611 ft.; standing.
Russell Ferrell's No. 4 Gillette (workover) .... Pulling screen to deepen.
Humble Oil & Refg. Co.'s No. 76 Simms-Smith ..... Drlg. sandy shale 5,390 ft.
Lake Shore Oil Co.'s No. 4 Duke ..... Shut down 2,594 ft.
J. M. West, trustee, No. 3 Scorrega ..... Fishing 5,031 ft.

SPINDLETOP—JEFFERSON COUNTY

Yount Lee Oil Co.'s No. 28 McFaddin (workover) ..... Comp. pumping 150 bbls. oil 5,282 ft.
Yount Lee Oil Co.'s No. 31 McFaddin (workover) ..... Abandoned 4,368 ft.
Yount Lee Oil Co.'s No. 120 McFaddin ..... Drlg. sand and lime 5,222 ft.
Yount Lee Oil Co.'s No. 108 McFaddin (workover) ..... Drlg. sand 3,812 ft.
Yount Lee Oil Co.'s No. 121 McFaddin ..... Drlg. sand and lime 4,009 ft.



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Yount Lee Oil Co.'s No. 122 McFaddin ..... Drlg. 3,616 ft.
Yount Lee Oil Co.'s No. 99 Gladys City ..... Derrick.
Yount Lee Oil Co.'s No. 13 Gladys City (workover) ..... Drlg. 3,746 ft.
Yount Lee Oil Co.'s No. 45 Gladys City (workover) ..... Drlg. 3,637 ft.

WEST COLUMBIA—BRAZORIA COUNTY

Continental Oil Co.'s No. 1 Hogg ..... Fishing drill stem 6,218 ft.; heaving shale.
Humble Oil & Refg. Co.'s No. 3 Smith ..... Set one joint screen 5,123 ft.; bailing and showing dry gas.
Saxet Oil Co.'s No. 2 Hogg ..... Drlg. sandy lime 3,911 ft.

NORTH DAYTON—LIBERTY COUNTY

Humble Oil & Refining Co.'s No. 1 Jamison, south ..... Derrick.

HIGH ISLAND—GALVESTON COUNTY

Gulf Production Co.'s No. 5-A Smith ..... Drlg. 4,412 ft.
Marrs McLean's No. 6 Cade (old well) ..... Drlg. 4,006 ft.
Marrs McLean's No. 12 Cade (workover) ..... Drlg. 3,610 ft.
Marrs McLean's No. 17 Cade ..... Drlg. 879 ft.

ORCHARD—FORT BEND COUNTY

Gulf Production Co.'s No. 20 Moore ..... Drlg. lime rock 567 ft.

DAMON MOUND—BRAZORIA COUNTY

H. R. Cullen's No. 2 Smith ..... Set 9⅝-in. casing; total depth 3,418 ft.; heaving shale.
L. & M. Oil Co.'s No. 5 Wisdom ..... Rig.

REFUGIO—REFUGIO COUNTY

Benedum & Trees' No. 3 Rooke ..... Rebuilding derrick to deepen 3,864 ft.
Morgan Oil Corp.'s No. 1 Fox, Block 72 ..... No report.
Herman F. Heep's No. 1 Rutherford ..... Drlg. 1,200 ft.
Houston Gulf Gas Co.'s No. 1 Lambert ..... Drilled plug to test oil sand 3,583 ft.
Houston Gulf Gas Co.'s No. 9 J. A. Lambert (workover) .. Comp. dry gas 3,564-77 ft.
Houston Gulf Gas Co.'s No. 2 Morgan-Vance ..... Drlg. 600 ft.
Houston Gulf Gas Co.'s No. 3 Cummings ..... Rig.
Houston Gulf Gas Co.'s No. 6 O'Brien ..... Spudded.
Houston Gulf Gas Co.'s No. 9 T. P. Shelly ..... Location.
Union Prod. Co.'s No. 2 O'Brien ..... Drlg. hard lime 4,367 ft.
Union Prod. Co.'s No. 2 Mitchell ..... Cem. 6⅝-in. casing 5,430 ft.; sand 5,430-38 ft.
Union Prod. Co.'s No. 2 Powers (workover) ..... Drlg. 5,300 ft.
Union Prod. Co.'s No. 1 Ben Shelton ..... Drlg. sand 2,531 ft.
Oigufer Oil Co.'s No. 3 Ryalls ..... Rig.
Saxet Oil Co.'s No. 1 Ryals ..... Drlg. 3,100 ft.
Saxet Oil Co.'s No. 3 Holmes Heard ..... Drlg. 2,612 ft.
Houston Oil Co.'s No. 9 Wilson Heard ..... Comp. gas well spraying some oil; sand 3,673-81 ft.; pressure 1,000 lbs.
Houston Oil Co.'s No. 11 Pratt-Hewitt-Rooke ..... No report.
Houston Oil Co.'s No. 12 Pratt-Hewitt-Rooke ..... No report.
Independent Oil & Gas Co.'s No. 1 O'Brien ..... Sand showing oil and gas 6,484-6,500 ft.; setting 6⅝-in. casing.
Independent Oil & Gas Co.'s No. 1-A J. F. B. Heard ..... Cem. casing to test 3,670 ft.
Independent Oil & Gas Co.'s No. 1-B J. F. B. Heard ..... Drlg.
Independent Oil & Gas Co.'s No. 2-B J. F. B. Heard ..... Rig.
Independent Oil & Gas Co.'s No. 1 T. P. Shelley ..... Cem. surface casing.
Independent Oil & Gas Co.'s No. 1 Huddleston ..... Location.
Independent Oil & Gas Co.'s No. 4 Reilly ..... Drlg. sand 3,600 ft.
Independent Oil & Gas Co.'s No. 5 Reilly ..... Comp. flowing 650 bbls. pipe line oil, ¾-in. choke, sand 3,679-89 ft.
Independent Oil & Gas Co.'s No. 6 Reilly ..... Location.
Independent Oil & Gas Co.'s No. 2 West ..... Location.
Larco Co.'s No. 1 Strauch ..... Cem. casing to test sand 3,671 ft.
Pearson Properties' No. 1 Babb ..... Comp. flowing 900 bbls. oil, ¾-in. choke, sand 3,680-98 ft.
Pearson Properties' No. 3 Fox ..... Drlg. 1,206 ft.
Ed Price et al's No. 1 Mission River ..... Derrick.
The Texas Company's No. 1 Shelton ..... Derrick.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co. & Gulf Refining Co.'s No. 25 Miller ..... Setting up.
Vacuum Oil Co. & Gulf Refining Co.'s No. 3 Bordages ... Drlg. hard sand 1,946 ft.
Vacuum & Gulf's No. 3 State ..... Comp. dry gas, 2,200 lbs., 5,610 ft.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 4 Caldwell ..... Testing sand 5,409 ft.
Calcasieu Oil Co.'s No. 6 Lempke ..... Rig.
Calcasieu Oil Co.'s No. 16 Watkins ..... Location.
Rycade Oil Corp.-Humble Oil & Refg. Co.'s No. 4 Gulf Land ..... Drlg. 3,503 ft.
Sunshine Oil Co.'s No. 6 Ellender ..... Derrick.
Rex Petroleum Corp.'s No. 1 Lacey ..... Rig.

JENNINGS—ACADIA PARISH

Jennings Petroleum Co.'s No. 3 Syndicate fee ..... Comp. pumping 40 bbls. 1,793 ft.
The Texas Company's No. 5 Rayne heirs (King tract) .... Drlg. 5,603 ft.
Yount Lee Oil Co.'s No. 5 Crowley, Sec. 48-9s-3w ..... Rig.
Yount Lee Oil Co.'s No. 7 Houssiere-Latrielle, Sec. 47-9s-2w ..... Drlg. 7,442 ft.
Yount Lee Oil Co.'s No. 1 E. F. Simms (northwest side) .. Drlg. 6,269 ft.

EDGERLY—CALCASIEU PARISH

Drysdale-Savoy Oil Co.'s No. 2 Hill (workover) ..... Rig up to deepen.
Strange Oil Co.'s No. 1 Reed ..... Rig.
Strange Oil Co.'s No. 1 Koonce ..... Rig.
Rex Petroleum Co.'s No. 10 Hunter (workover) ..... Drlg. 4,309 ft.

VINTON—CALCASIEU PARISH

Gulf Refining Co.'s No. 49 Star-Vincent ..... Drlg. 1,501 ft.
Marrs McLean's No. 4 Gray (workover) ..... Drlg. 1,809 ft.
Vinton Petroleum Co.'s No. 5 Matilda Gray ..... Rig.
Vinton Petroleum Co.'s No. 19 Vincent (workover) ..... Comp. pumping 5 bbls. net oil 2,887 ft.
Vinton Petroleum Co.'s No. 7 Gray (workover) ..... Drlg. 2,511 ft.
Wilson Broach's No. 1 Vinton ..... Drlg. 959 ft.

BAYOU BOUILLON—ST. MARTIN PARISH

Rycade Oil Corp.'s No. 9 Bouillon fee ..... Location.
Rycade Oil Corp.'s No. 2 Atchafalaya fee (oil well) .... Cored hard, sandy shale and lime 3,152 ft.
Rycade Oil Corp.'s No. 5 Atchafalaya fee ..... Derrick.

STARKS—CALCASIEU PARISH

J. O. Davis' No. 1 Industrial ..... Drlg. gumbo 2,521 ft.
Gulf Refining Co.'s No. 18 Lutcher-Moore ..... Started drilling.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 9 Yount Lee ..... Losing returns 485 ft.

ANSE LA BUTTE—ST. MARTIN PARISH

Yount Lee Oil Co.'s No. 1 Hebert ..... Derrick.

SORRENTO—ASCENSION PARISH

Gulf Refining Co.'s No. 17 United Land Co. ..... Rig.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Empire Gas & Fuel Co.'s No. 1 Jackson, San Felipe ..... Abandoned in cavity 3,308 ft.

BRAZORIA COUNTY

Mills Bennett Production Co.'s No. 1 Allen, Allen Dome .. Cored sandy shale 4,189 ft.
Faust et al's No. 5 Faust ..... Shut down 3,248 ft.
Shell Petroleum Corp.'s No. 1 Blakely-Winston, Danbury ..... Sandy shale and lime 2,720 ft.; shut down for high water.
Steel & Strickland's No. 1 Lockridge ..... Rig.

CHAMBERS COUNTY

Chicago Oil Corp.'s No. 1 Lawrence ..... No report.

FORT BEND COUNTY

Gulf Production Co.'s No. 1 Brazos Valley, Clodine ..... Rigging.
Pure Oil Co.'s No. 1 Farris, Roberts Sur. ..... Location.

HARRIS COUNTY

Baldwin and associates' No. 1 Kitzman, Cypress ..... Shut down 4,055 ft.
R. E. Brooks' No. 1 Beall, Eureka ..... Drlg. 900 ft.
Gulf Crest Oil Co.'s No. 1 Gulf Crest ..... Standing 2,520 ft.
A. F. Belunek's No. 1 Thompson ..... Rig.
Cranfill & Reynolds' No. 1 Brown ..... Drlg. gumbo 4,236 ft.
Hammond et al's No. 1 Brodt ..... Gumbo 1,190 ft.; shut down after fire.
Higgins Oil & Fuel Co.'s No. 1 Siadous, Mykawa ..... Drlg. sandy shale 3,388 ft.
Humble Oil & Refg. Co.'s No. 7 Warren, Hockley ..... Spudded.

Humble Oil & Refg. Co.'s No. 2 Minnetex ..... Standing with casing cem. 1,177 ft.
Humble Oil & Refg. Co.'s No. 1 Sladous (workover) ..... Drlg. shale 3,583 ft.
Humble Oil & Refg. Co.'s No. 2 Woodburn ..... Drlg. 3,508 ft.
Rich et al's No. 1 Highlands ..... Derrick.
Torsen et al's No. 1 Stewart ..... Shut down 2,532 ft.
Watts Brothers' No. 1 Hubert, Mykawa ..... Drlg. gumbo and lime 3,830 ft.
York & Robertson's No. 1 Garrett, Harris & Carpenter Sur. ..... Sandy shale 1,917 ft.; shut down.

JEFFERSON COUNTY

Gulf Production Co.'s No. 8 Bordages ..... Drlg. 5,402 ft.
Gulf Production Co.'s No. 4 Burrell ..... Testing oil sand 4,206 ft.
Gulf Production Co.'s No. 2 Guy Junker, Fannette ..... Drlg. 3,951 ft.
River Oil Corp.'s No. 1 Ship Channel, Brown Survey .... No report.
Rosedale Oil Co.'s No. 1 Walker ..... Standing after testing salt water 1,649 ft.
Stilwell Oil Co.'s No. 1 Brinkman ..... No report.
The Texas Company's No. 2 Pipkin, Big Hill ..... Coring 5,827 ft.
The Texas Company's No. 1 Fitzhugh, Big Hill ..... Bailed salt water 5,070 ft.; pulling screen.

LIBERTY COUNTY

Campbell et al's No. 1 fee ..... Rig.
Gulf Production Co.'s No. 1 Weiser ..... Drlg. 5,511 ft.
Gulf Production Co.'s No. 3 Boyt, Hankamer ..... Testing oil sand 3,698 ft.
Humble Oil & Refg. Co.'s No. 6 Sterling, Moss Bluff .... Bailing; no show 5,661 ft.
Cranfill Reynolds Co.'s No. 1 Vajdak, Sheeks ..... Cem. casing 5,750 ft.; to test sand showing oil.
Cranfill & Reynolds Co.'s No. 4-A Esperson, Sheeks ..... Rig.
Cranfill & Reynolds Co.'s No. 5-A Esperson, Sheeks ..... Rigging.
Cranfill & Reynolds Co.'s No. 6-A Esperson, Sheeks ..... Location.
Yount Lee Oil Co.'s No. 2 Moores Bluff, Sheeks ..... Drlg. shale and lime 3,802 ft.

MATAGORDA COUNTY

Cockburn et al's No. 1 Hawkins, Shepherds, Mott ..... Location.

MONTGOMERY COUNTY

Kelley-Baker et al's No. 1 Juerges ..... No report.
Pure Oil Co.'s No. 1 Damphier, Smith Sur. ..... Location.

ORANGE COUNTY

Gulf Production Co.'s No. 1 J. E. Starks, Port Neches ... Drlg. 5,654 ft.
Gulf Production Co.'s No. 1 M. H. Starks, Port Neches ... Location.
The Texas Company's No. 2 Polk, Port Neches ..... Derrick.

SOUTH LOUISIANA
ASCENSION PARISH

Triumph Oil Corp.'s No. 2 Lacey, Sec. 20-10s-4e ..... No report.

ASSUMPTION PARISH

Gulf Refining Co.'s No. 1 Armitese, Napoleonville ..... Rig.
Poor Boys Drilling Co.'s No. 1 LeBarre, Sec. 47-12s-13e .. Rigging up.

CALCASIEU PARISH

Wilfred Lahay's No. 2 James ..... No report.

CAMERON PARISH

Shell Pet. Corp.'s No. 6 Watkins, Black Bayou ..... Swabbed salt water 4,956 ft.
Shell Pet. Corp.'s No. 12 Watkins (workover) ..... Pulling screen to deepen 5,221 ft.
Shell Pet. Corp.'s No. 1 Marceaux, Mallard Bay, Sec. 32-12s-3w ..... Drlg. sticky shale, lime and sand 5,824 ft.
The Texas Company's No. 5 Calcasieu Lake, Calcasieu Lake Dome ..... Location.
Vacuum Oil Co.'s No. 1 Cameron Meadows, Sec. 21-14s-13w ..... Location.
Yount Lee Oil Co.'s No. 1 Starks, Sec. 1-15s-15w ..... Drlg. shale 7,314 ft.

IBERIA PARISH

The Texas Company's No. 4 Vermillion Bay ..... Drlg. rock 4,100 ft.

IBERVILLE PARISH

Shell Petroleum Corp.'s No. 4 Wilbert, White Castle .... Location.
Standard Oil Co.'s No. 3 Wilbert, Bayou Blue ..... Derrick.
Standard Oil Co.'s No. 4 Wilbert, Bayou Blue ..... Location.
Standard Oil Co.'s No. 4 Schwing, Bayou Blue..... Drlg. rock 4,405 ft.
Standard Oil Co.'s No. 5 Schwing, Bayou Blue..... Testing sand 2,107-14 ft.

JEFFERSON DAVIS PARISH

Pure Oil Co.'s No. 1 May, Sec. 1-10s-5w ..... Derrick.
Yount Lee Oil Co.'s No. 1 Courtney, Welsh ..... Rig.

LA FOURCHE PARISH

Gulf Refining Co.'s No. 25 Stark, Thibodaux ..... Drlg. 2,936 ft.
Gulf Refg. Co.'s No. 1 City of New Orleans Bay Cham- Drlg. 1,072 ft.

PLAQUEMINE PARISH

Humble Oil & Refg. Co.'s No. 1 Cockrell-Moran, Lake Grand Ecaille ..... Drlg. gumbo 830 ft.
Humble Oil & Refining Co.'s No. 1 Lake Washington, Lake Grand Ecaille ..... Total depth 4,260 ft.; reaming.
The Texas Company's No. 3 Garden Island Bay ..... Waiting cem. to set 1,766 ft.

ST. LANDRY PARISH

Elbof Exploration Co.'s No. 1 Ledoux, Eunice..... No report.
Herbert-Baker Oil Co.'s No. 1 Fisher, Section 10-3s-4e... No report.
Gulf Refining Co.'s No. 1 Hoskins, Port Barre ..... Drlg. 3,359 ft.
Gulf Refining Co.'s No. 1 Ovide Lahaye, Port Barre ..... Rigging.
The Texas Company's No. 3 Botney Bay, Port Barre .... Started drilling.

ST. MARTIN PARISH

Ohio Oil Co.'s No. 5 Martin, Hager ..... Derrick.
The Texas Company's No. 1 fee, Hager Dome ..... Drlg. 5,600 ft.
The Texas Company's No. 3 fee, Hager ..... Location.
The Texas Company's No. 2 St. Martin, Hager ..... Drlg. 4,501 ft.
The Texas Company's No. 4 fee, Hager ..... Location.
The Texas Company's No. 1 Iberville, Hager ..... Drlg. 3,920 ft.
The Texas Company's No. 2 Iberville, Hager ..... Location.
The Texas Company's No. 3 Iberville, Hager ..... Location.

TERREBONNE PARISH

The Texas Company's No. 4 State-Bay St. Elaine ..... Location.
The Texas Company's No. 2 La. L. & E. Co., Dog Lake.. Cem. casing 1,719 ft.
The Texas Company's No. 1 State—Bay Junop..... Total depth 4,778 ft.; oil sand sidetracking 4,622 ft.
The Texas Company's No. 3 State—Lake Pelto..... Rig.
The Texas Company's No. 2 State—Caillou Island..... Rig.
The Texas Company's No. 3 State—Lake Barre ..... Rig.
The Texas Company's No. 4 State, Lake Barre ..... Location.
The Texas Company's No. 3 L. L. & E. Co., Four Isle .... Location.

SOUTHWEST TEXAS

(Continued from Page 66)

of D. D. Baker 60-acre tract; total depth 960 feet; drilling in shale.

Humble Oil & Refining Co.'s No. 3 Sally Wilson, in the Jacob Darst Survey, 150 feet each way out of southwest corner of Sally Wilson and others' 50.5-acre tract; will spud in soon.

Humble Oil & Refining Co.'s No. 2 Yates Wilson, in the Jacob Darst Survey, 1,250 feet from north line, 150 feet east line of west line of 1,056-acre lease, 2,050 feet southwest of Dallas Wilson well; spudded in.

Turman Oil Co.'s No. 1 Dowdy, southeast corner of D. D. Baker 60-acre tract, 2,100 feet southwest of Dallas Wilson No. 1; total depth 2,111 feet; drilling in Taylor marl.

DRILLING ACTIVITY

Caldwell County—Bruner Pool

Alexander & Smith Oil Co.'s No. 1 G. W. New, in the J. Hinds Survey, 50 feet to north and west lines; dropped from report until work is resumed.

Guadalupe County—Darst Creek Field

Cranfill & Reynolds' No. 1 Appling, in the J. Hodges Survey, 150 feet east and 150 feet most eastern southeast of west line of 117-acre farm, 2,300 feet northwest and 3,650 feet southwest of survey, Block 66; rigging up.

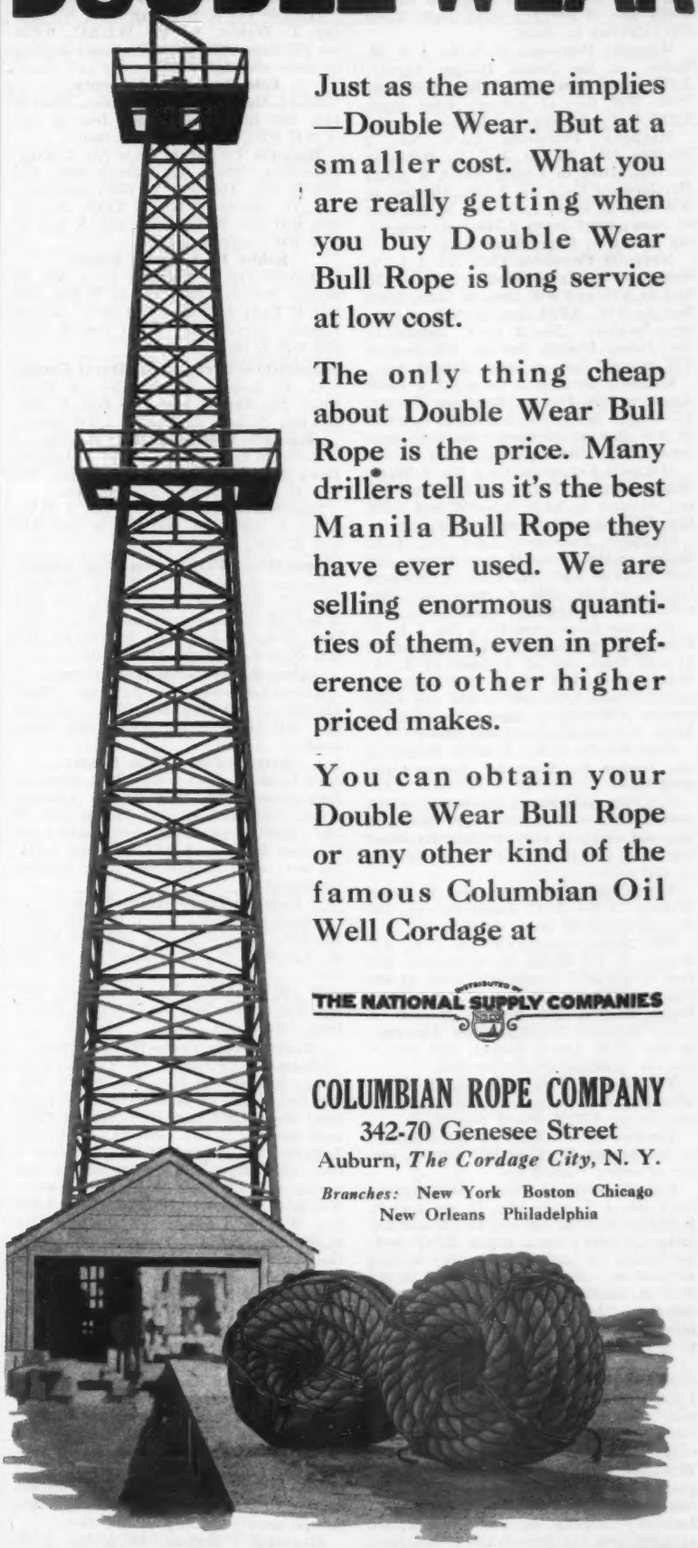
Gulf Production Co.'s No. 1 C. Anderson, in the J. C. Darst Survey, 450 feet from south line, 150 feet from east line of farm in Darst Survey; derrick.

Gulf Production Co.'s No. 1 Thomas Dix, in the Joel R. Robinson Survey, 150 feet to northeast and southeast lines of lease, 300 feet southwest of United North & South's No. 1 Dix; derrick.

Gulf Production Co.'s No. 1 Tadlock, in the Jacob C. Darst Survey, 150 feet northwest corner; derrick.

Humble Oil & Refining Co.'s No. 1 L. G. Denman, in the A. S. Emmet Survey, 1,700 feet south line and 150 feet northeast line of survey; total depth 1,-

DOUBLE WEAR



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500 feet; drilling in shale. No. 2 L. G. Denman, in the A. S. Emmet Survey, 1,500 feet south line, 150 feet northeast line of survey; drilling in chalk at 2,178 feet.

Kirby Petroleum Co.'s No. 1 Rand Miller, in the Jerome B. Alexander Survey, 3,450 feet to west line, 150 feet to north line of survey; total depth 2,362 feet; drilling in chalk.

Magnolia Petroleum Co.'s No. 1 A. M. Baker, in the James Hodges Survey, 2,875 varas from the SW line, 810 varas from NW line of survey; total depth 2,218 feet; drilling in shale.

Magnolia Petroleum Co.'s No. 2 Thomas Dix, in the Joel R. Robinson Survey, offset to United North & South Development Co.'s No. 1 Dix, 150 feet to NW line of lease, 1,000 feet to NE line of lease; total depth 2,549 feet; cementing casing in Georgetown lime.

Magnolia Petroleum Co.'s No. 1 L. V. Echols, in the James Hodges Survey, 150 feet to NW and SW lines of farm, 3,650 feet to SW, 3,220 feet to NW of survey; location. No. 2 L. V. Echols, in the James Hodges Survey, 150 feet to SW and SE lines of lease; derrick up.

Magnolia Petroleum Co.'s No. 1 Peter Klien, in the Joel R. Robinson Survey, 150 feet to NE line of lease, 150 feet SW of SW line of Alexander Survey; total depth 2,560 feet; setting casing.

Magnolia Petroleum Co.'s No. 1 W. B. Walker, Survey 1, 150 feet NW and SW cor. of farm or 3,650 feet SW and 3,220 feet NW line of survey; rigging up.

Magnolia Petroleum Co.'s No. 1 C. Zedler, in the James Hodges Survey, 150 feet to NW and NE lines of 100-acre tract, one-half mile S from the Magnolia's No. 1 Appling; derrick.

Mundine Investment Co.'s No. 1 L. V. Echols, in the James Hodges Survey, in 11-acre tract out of S point of L. V. Echols tract, 150 feet to NW and SW lines of tract, 3,650 feet to SW and 4,200 feet to NW line of survey; total depth 2,814 feet; flowing sulphur water.

Penn Oil Co.'s No. 1 Rand Miller, in the Jerome B. Alexander Survey; rigging up.

Sun Oil Co.'s No. 1 Knoblock, in the Joel R. Robinson Survey, 150 feet each way out of the S cor. of Chris Knoblock 150 acres in SW part of survey; drilling at 650 feet.

The Texas Company's No. 2 Dallas Wilson, in the J. C. Darst Survey, 150 feet to S and W lines; derrick.

The Texas Company's No. 2 L. Anderson, in the Jacob Darst Survey, 150 feet to N and E lines; shut down at 685 feet. No. 3 L. Anderson, in the Jacob Darst Survey, 150 feet to N and W lines; derrick. No. 4 Lemmie Anderson, in the J. C. Darst Survey, 150 feet N and W lines of farm; derrick.

The Texas Company's No. 1 Posey, offsetting Sun Co.'s No. 1 Knoblock, 300 feet to the SE; building derrick.

Turman Oil Co.'s No. 2 Rand Miller, in the Jerome B. Alexander Survey, center of lease; rigging up.

United North & South Development Co.'s No. 1 Thomas Dix, in the Joel R. Robinson Survey, 150 feet to SE and SW lines of lease; total depth 2,547 feet; set casing on tops of Edwards; waiting to drill in. No. 2 Thomas Dix, in the Joel R. Robinson Survey, 150 feet to SE line of lease, 450 feet to SW line of lease, 300 feet NE of No. 1 Dix; ready to spud.

Pettus Field—Bee County

Mission Drilling Co.'s No. 6 Ray, 1,200 feet E of No. 2; total depth 2,200 feet; drilling in lime and gumbo.

Lasater—Brooks County

Houston Oil Co. of Texas' No. 1 Holbein-Wormser, in the Palo Blanco de Maguellas Survey, 330 feet N line, 6,540 feet E line, direct offset 660 S of No. 1 Lasater; drilling in lime and gumbo at 3,905 feet.

Kingsville—Kleberg County

Humble Oil & Refining Co.'s No. 8 R. J. Kleberg, in Lot 7, Section 40, K.T.&I. Survey, 150 feet S and E lines of lot; trying to complete as dry gas well in sand at approximately 2,400 feet.

Cartwright—Live Oak County

Houston Oil Co.'s No. 2 J. B. Dunning, in the M. B. Kilvin Survey, 1,445 feet N of No. 1; drilling in shell and shale at 3,886 feet.

White Point—San Patricio County

Spencer & Rhodes' No. 2 The Texas Company Fee, Lot 6, Roos Subd., 150 feet to S and W lines of W 50 acres; derrick partly built; standing.

Nursery—Victoria County

Humble Oil & Refining Co.'s No. A-3 Jay J. Welder, in the D.L.&C., 1,634 fee SE lines, 736 feet SW lines; drilling in shale at 5,415 feet.

Cole Pool—Duval County

Allied Gas Co.'s No. 3 Dinn, Survey 143, 660 feet N line, 660 feet E line of NE SE; drilling at 500 feet.

Magnolia Petroleum Co.'s No. 2 King-Benavides, Block 12, Survey 694, 450 feet N line, 150 feet W line; location.

J. G. Mackay's No. 3 Dinn, Survey 454, 660 feet W line, 660 feet N line of NW SW; rigging up.

Kohler Pool—Duval County

Humble Oil & Refining Co.'s No. 38 Kohler, Survey 144, 990 feet N line, 495 feet E line; drilling at 50 feet. No. 39 Kohler, Survey 165, 1,650 feet S line, 330 feet E line; location.

Schoolfield-O'Byrne Pool—Duval County

C. E. Long's (Shell) No. 4 Hahl, Block 26, Survey 250, 330 feet E line, 150 feet N line; drilling at 1,500 feet.

Randado Pool—Jim Hogg County

Randado Oil Corp.'s No. 35 Palacious, Block 2, Survey 291, 150 feet S line, 450 feet E line; standing at 100 feet.

Magnolia Petroleum Co.'s No. 1 Weil, Block 2, Survey 5, 660 feet N line, 349 feet E line; rigging up.

Henne-Winch-Fariss—Jim Hogg County

George S. Marshall's No. 4 Holbien, Share 3, Block 10, Survey 11, 150 feet S and W lines; derrick up. No. 5 Holbien, Share 3, Block 10, Survey 15, 150 feet N and W lines; rigging up.

Alworth Pool—Jim Hogg County

Alworth-Stevens' No. 1 Garza, Block 12, Survey 40, 450 feet NW line, 150 feet NE line; total depth 1,034 feet; sand.

Aviator Pool—Webb County

C. E. Mayberry's No. 9 Puig, Block 1, Edgingston Subd. Puig Ranch, Albercas grant, 729 feet W line, 1,100 feet N line; total depth 1,596 feet; sand; set 6⅝-inch casing at 1,566 feet; sand 1,571-75 feet; sand at 1,590-96 feet; waiting on cement.

Carolina-Texas—Webb County

Foster-Barnsley's No. 7 Webster, Survey 684, 750 feet E line, 510 feet S line of NE SW of survey; drilling at 600 feet.

W. R. Shankle's No. 2 Webster, Survey 684, 1,170 feet W line, 150 feet S line; rigging up.

Magnolia-Cole Pool—Webb County

Magnolia Petroleum Co.'s No. 1 F. Benavides, Survey 660, 660 feet N line, 660 feet E line of N half SE of survey; total depth 1,525 feet; drilling; set 12½-inch casing at 22 feet. No. 2 C. Benavides, 1, Survey 66, 150 feet W line, 200 feet N line; total depth 2,335 feet; set 8⅛-inch casing at 2,329 feet; waiting on cement. No. 3 C. Benavides, Survey 662, 1,980 feet W line, 1,980 feet S line; drilling at 50 feet. No. 4 Brennan-Benavides, in the Mariano Arispe grant, corner Blocks 16, 17, 52, 53, Myrtle E Hale Subd.; drilling at 200 feet. No. 1 D. Benavides, Block 14, Survey 694, 660 feet to E and S lines; derrick.

O. W. Killam's No. 15 Bruni, Survey 6, Mariano Arispe grant, 150 feet SW line, 150 feet SE line of Survey 6, Adams Subd. Bruni lands; total depth 2,269 feet; sand at 2,258-69 feet; waiting on cement.

Cole Gas—Webb County

E. H. Buckner's (Sun) No. 1 Bruni, Survey 5, Adams Subd., corner Blocks 4, 5, 9, 10, Adams (Foltz) Subd. Mariano Arispe grant; drilling at 192 feet.

Magnolia Petroleum Co.'s No. 1 S. Perez, Survey 460, J. Poitevent, 1,980 feet N line, 660 feet W line; total depth 3,180 feet; drilling; sand at 2,489-91 feet; tested dry.

Magnolia Petroleum Co.'s No. 2 King-Harper, Block 2, Survey 323, 660 feet N and E lines; location.

Houston Oil Co.'s No. D-20 Benavides, Block 5, Survey 753, 566 feet N line, 666 feet E line; total depth 2,351 feet; testing; set 6⅝-inch casing at 2,346 feet; sand at 2,346-51 feet.

Jennings Pool—Zapata County

O. W. Killam's No. 18, Cuellar Cerrito Blanco grant, 3,567 feet NW line, 2,734 feet NE line of 1,772-acre Cuellar tract; drilling 400 feet.

R. F. Blankenship's No. 2 Garza, Block 2, Survey 413, 425 feet W line, 425 feet N line; derrick.

Harry L. Fansler's No. 1 F. Cuellar, Survey 285, 150 feet W line, 1,170 feet N line; drilling at 700 feet.

Blair & Acklin's No. 2 Trevine, Block Survey 66, 150 feet W line, 200 feet N line; total depth 1,251 feet; sand; fishing for slip.

R. F. Blankenship's No. 1 Garza, Block 13, Survey 413, 160 feet N and E lines; total depth 1,510 feet; resumed drilling.

O. W. Killam's No. 17 Cuellar, 600 feet N line, 940 feet E line, 160-acre Cuellar tract out of 1,772-acre Cerrito Blanco grant; derrick.

South Texas Production Co.'s No. 2 Roy Jennings, in the Cerrito Blanco grant, 13,000 feet to NW line, 9,800 feet to SW line; total depth 2,085 feet; sand; shows gas. No. 7 Joe Jennings, Cerrito Blanco grant, 640 feet SE line, 66 feet NE line; total depth 1,800 feet; drilling; sand at 1,794-96 feet; salt water. No. 8 Joe Jennings, Cerrito Blanco grant, 2,640 feet SE line, 2,660 feet NE line; drilling at 1,200 feet.

Henne-Winch-Fariss—Zapata County

Magnolia Petroleum Co.'s No. 4 F. G. Martinez, Survey 4, 660 feet S line, 660 feet E line of W half of survey; reaming; total depth 1,884 feet. No. 5 Martinez, Survey 6, 660 feet S line, 660 feet E line of S line of Magnolia tract in NW of survey; total depth 1,870 feet; sand; testing; set 8⅛-inch casing at 1,870 feet.

MICHIGAN FIELDS

(Continued from Page 70)

by a caving hole. The bottom of the hole is now below 5,000 feet and the well is rapidly nearing record depth for Michigan. No additional show of oil or gas has been encountered, although the operators are hoping for commercial production in the Trenton limestone. The well is located on the C. E. Moe lease, SE SE, Section 6-9n-13w, Chester Township, Ottawa County, about 2 miles east of the village of Ravenna.

The Wright Oil Co.'s No. 1 J. Kluting, SW NW, Section 10-8n-13w, Wright Township, the only other active wildcat in Ottawa County at present, has been shut down for a week. New developments on this well are expected in the near future. It is nearly as depp as the Michigan-Moe well.

Another shallow gas well with an estimated daily flow of about 2,000,000 feet of gas has been struck near Manistee, according to E. M. Self, Muskegon oil operator, who is interested in the development about 90 miles north of the Muskegon Field. The new gasser is Tackett & Drake's No. 1 well on the Manistee Sand & Dock Co. lease, NE NW, Section 13-21n-17w, Filer township.

Drive Pipe Jammed by Gas

Gas was struck at 634 feet and the flow blew out the water and jammed the drive pipe so that John Cain, the contractor, has had trouble in landing 10-inch casing. The well is located near the Manistee city limits.

On the opposite side of Manistee Lake a new well has been started by E. M. Self and others on the No. 1 Sands lease in Section 6-21n-17w, also Filer township. The well is more than 200 feet deep. It is located between the villages of East Lake and Parkdale. Two other wells in the vicinity of Manistee have had large and small shows of shallow gas, which is considered a good indication of future possibilities in this section of western Michigan.

The Diamond-Thompson-Holland's No. 1 Diamond, SE NW, Section 15-20-17, Grant Township, Mason County, was completed at 728 feet as a 2,000,000-foot gasser in the shallow pay. It is located about 8 miles south of Manistee. Thompson Brothers' Muskegon contractors, who drilled the well, are planning to drill at least two more. The Fisher-Robbins Oil & Gas Co. of Pittsburgh also had a good show of gas at a shallow depth in its No. 1 Chamberlain well near Arcadia. The well is located on the Chamberlain estate, NE NW, Section 14-24n-16w, Arcadia township, Manistee County, and is about 10 miles north of Manistee. It has been shut down for some time at about 850 feet.

Salt Water Threatens Wells

Bottom salt water is threatening about a dozen Dundee oil wells in an 80-acre section of the Laketon township area of the Muskegon oil field, according to representatives of the operating companies most affected. The Reed Oil Co. is said to be the hardest hit with four wells on the H. Young lease, SE NE, Section 11-10-17, making about 90 per cent water and only 10 per cent oil. The change from 10 to 90 per cent water has come during the past few weeks, it was stated.

Adjoining the Reed-Young 40-acre lease on the north is the Ohio Oil Co.'s F. J. Gates lease with one well reported making more than 50 per cent water. It is located NE NE, Section 11-10-17. Two wells of the Johnson Oil Refining Co., No. 1 and No. 9 John Thompson, both located SW NW, Section 12-10-17, are said to be making about 50 per cent water, although none of the other 14 wells on the lease are making any amount of water.

The Dixie Oil Co.'s No. 7 Kate McLaughlin recently was drowned out by water and is being cleaned out. It is located SW SW, Section 12-10-17, Laketon township, in the same area of the field. Three wells of the Rock Oil Co. on the W. P. Dinan lease, NE SE, Section 11-10-17, are understood to be making water in the Dundee.

Some Wells Unaffected

None of the wells of Nelson & Witt, Inc., on the adjoining Charles Horton lease, NE SE, Section 11-10-17, have been troubled with salt water, according to H. C. Nelson. Wells of the Sterling Oil Corp. on the Mathilda Shuler lease, NW NW, Section 12-10-17, also have been unaffected.

The wells are surrounded by other producers which are showing no salt water encroachment and it is believed that swabbing and other production methods used by some of the operators have caused a premature encroachment of water. Many edge wells in all formations are making water but none have been abandoned recently as being worthless to pump. In general, operators in the field have found water encroachment more slow than was expected. Part of the oil now run from the field must be treated for emulsion, causing unsteady operation of the wells and uncertainty as to the potential daily capacity of the field.

CONCESSION FOR SUBSTITUTE

Law No. 1,033 of the Legislative Assembly of Matto Grosso, Brazil, approved by the president on October 3, 1929, and published in the Gazeta Official of October 5, 1929, provides for the granting of an exclusive 30-year concession for the manufacture in the state of a substitute for gasoline called nortina, exempting it from imposts and authorizing the executive power to grant any aid which will popularize the product, including the creation of a tax upon gasoline brought into the state.

There are probably about 1,500 automobiles and trucks in Matto Grosso at the present time. Brazilian import statistics do not show the amount of gasoline brought into Matto Grosso, as the greater part goes via railway from Sao Paulo. However, the good roads movement is slowly but surely gathering momentum, especially in the southern part where coffee, cattle, and mate are bringing riches, and the number of automobiles in use in that state is bound rapidly to increase.

Practical Suggestions in Refining

By W. T. Ziegenhain

Combustion of Coke Made Practical by Oil or Gas Burners

Fine coke and pulverized lump coke are being successfully burned at several refineries now with little or no trouble, because of the use of an oil or gas burner extending into the fire box of the still or boiler. The utilization of coke is more practical in boiler plants than under the stills because of the more exacting control required of the stills but in many cases, using it under the boilers alone would effect a saving in the plant and rid the plant of a coke pile.

The principle found practicable is that of elevating the coke to overhead bins in the boiler house for storage. It is wetted down in most cases to facilitate cleaner handling. From these bins it is run to a rotating proportioning table or its equivalent where a constant quantity of the coke is measured out and fed to the grinders or pulverizers below. The grinder feeds into a stream of air that blows it to the point where the coke is fed overhead into the fire box. The height and capacity of the boiler will determine whether one fan is sufficient or whether an auxiliary fan is needed to lift the coke to the required height but this is simply a matter of local conditions.

Produce Shower of Coke

A flat nozzle distributes the coke in a fan shape over the fire box and as the coke continuously falls it passes through the hot gases of the burning coke through the gas flame or fuel oil flame being injected into the fire box from each side. The coke becomes ignited and the heat of combustion carries the combustion on throughout the film and as each successive film of coke pours down through the fire box, complete combustion of the coke is effected.

Sometimes the burning of the coke is necessarily intermittent and by arranging the coke entrance as an overshot feed, there is no interference in installing and using the ordinary gas or oil burners in the front of the boiler as customary. These may also be operated simultaneously with the burning of the coke, the hotter gas or oil fire from the front of the boiler tending to further guarantee the complete ignition of the coke.

Oil Content Factor

Coke containing a large percentage of volatile matter might be found to yield a smaller quantity of usable heat than would be shown as the potential heating value of the fuel from a laboratory analysis due to distilling off the volatile oils in the intense heat in the upper portion of the fire box. With excess air, these volatile fractions will burn as they pass through the tube section and some benefit will be derived but the fact presents the need for alteration in the ordinary design.

These facts are necessarily general and must be fitted to specific conditions and no set conditions seems to exist in any two plants. The general scheme is being successfully followed out in several plants and the more general adoption seems practicable.

GASOLINE FROM COAL

CHATHAM, Ontario, Dec. 21.—Tests are being conducted by the Department of Mines at Ottawa into the feasibility of manufacturing synthetic gasoline from coal. It is reported that Dr. T. E. Warren, formerly of Queen's University, Kingston, has succeeded in producing 45 gallons of gasoline from a ton of coal. Gasoline can, it is stated, be produced from all coals except anthracite, which is not at present produced in Canada.

NO SATISFACTORY SOLVENT FOUND FOR EXTRACTION OF SULPHUR OILS

The greatly increased production of sulphurous crudes and the proven existence of vast undeveloped reserves of these crudes in West Texas, California and in foreign fields has prompted a more exacting and detailed investigation of the means available commercially for the removal of these objectionable compounds. At present this is being done without exception by chemically treating the distillates or products of the crude rather than the crude itself.

The American Petroleum Institute, as one of its research problems being developed following the gift of $250,000 by the Universal Oil Products Co., has issued a preliminary report on the use of organic solvents for the extraction of sulphurous fractions from the crude.

Not Commercial Operation

This project is under investigation at Northwestern University but to date no method of treatment has been found commercially feasible to put into practice. While the results have been negative, the work has covered such a wide range of solvents that research along similar lines in other laboratories may benefit from these findings.

The general plan was to find, from among 61 solvents tried, one that could be mixed with a sulphurous crude and because of the selective action of this solvent, the sulphur-bearing fraction extracted from the crude to leave a nearly sulphur free oil to be refined in the usual manner.

Furfural, absolute ethyl alcohol and acetaldehyde offered the greatest promise of producing the desired results from the laboratory standpoint, but the reduction of the sulphur content of the crude after repeated extractions in each case would not warrant their general use in practice under known methods.

The solvents chosen for investigation included only those which did not mix completely with the oil being treated. This is necessary in order to effect the separation of the two following the extraction of the sulphurous fraction.

California Crude Used

California crude from the Inglewood Field, showing a sulphur content of 2.3 per cent, was used throughout the experiment. In each case, two parts of oil and one part of the solvent was shaken together to effect the extraction and then allowed to stand for several hours to permit their separation.

Following this procedure, the sulphur content of the furfural extract increases to .42 per cent, the absolute ethyl alcohol to .36 per cent and the acetaldehyde to .31 per cent. Although the use of acetaldehyde did not prove as effective as the first two solvents mentioned, it showed the quickest separation and was considered the logical one for commercial application. A large scale series of extractions were then made using acetaldehyde. In succession, the crude was shaken with three fresh portions of the solvent, followed with the usual separation. The oils extracted showed the following sulphur contents in the order of the extractions, 2.77 per cent, 2.77 per cent and 2.28 per cent. Further extractions then showed that a diminishing percentage of sulphur would be extracted each time. The loss was greater with each succeeding extraction and the separation more difficult.

Evaporate Off Solvent

The oil extracts were recovered from the solvent by evaporating off the solvent at 40° C. When the acetaldehyde was recovered from the crude in a similar manner, it was found that the remaining crude showed a slightly higher sulphur content. This was accounted for by the loss of low sulphur bearing fractions which brought the average of the residue higher. This was then thought to account for the high sulphur content of the oil extracted by the solvent but further experiments definitely showed this not to be true and the solvents recommended as best, did exert selective solvent action.

This was proven by distilling the crude down to a constant weight at 40° C. and then the extraction was followed out. The sulphur content of the fractions extracted with the solvents was very noticeably higher but not sufficiently high, nor was the procedure sufficiently simple, to suggest the use of solvents for the solution of the problem based on what was known to date.

Solvents Investigated

The list of solvents investigated includes the following: In the list of alcohols were methyl alcohol, ethyl alcohol, normal propyl alcohol, isopropyl alcohol, normal butyl alcohol, secondary butyl alcohol, tertiary butyl alcohol, normal amyl alcohol, isoamyl alcohol, tertiary amyl alcohol, ethylene glycol, propylene glycol, glycerol, hexalin, furfural alcohol, diacetone, and citronellol. The aldehydes investigated includes acetaldehyde, butraldehyde, heptaldehyde, benxaldehyde, cinnamaldehyde, anisaldehyde, crotonaldehyde, citraldehyde and furfural.

The ketones tested were as follows, acetone, ethyl ketone, methyl ketone and acetophenone. Three ethers were tried including ethyl ether, acetal, and anisole. The list of esters included methyl acetate, ethyl acetate, isoamyl acetate, ethyl oxalate, glycol diacetate, glyceryl and triacetate.

Two acids were tried, acedic and propionic acids. Several halogen compounds were investigated including chloroform, carbon tetra chloride, normal butylchloride, and ethyl dichloride. Acetonitrile was tested as a typical nitrile.

A group of mixed compounds were also investigated and include ethyl acetoacetate, glyceryl monacetate, glyceryl diacetate, lactic acid, methyl chloroacetate, dichloroacetate, ethylene, chlorohydrin, dichloroethyl ether, acetal, diethyl glycol, triethyl glycol, triethyl glycol aldol, tetralin, furan and quinoline.

Recent Patents

USE WAX TO REMOVE CLOUD

1,737,737. Method of Removing Cloud-Forming Materials from Hydrocarbon Oil. Charles L. Suhr and Winfield S. Zehrung, Oil City, Pa., assignors to the Pennzoil Co., Oil City, Pa., a corporation of Pennsylvania. Filed September 8, 1927. Serial No. 218,358. 1 Claim. (Cl. 196—19.)

The method of removing the cloud-forming materials from the heavy distillates of residuum oils consisting in adding crystalline wax thereto within a substantial range of from 3 to 10 per cent, chilling the mixture and separating the wax therefrom by filtering.

REMOVE SLUDGE

1,739,898. Process of Treating Oil. Earle W. Gard, Long Beach, and Blair G. Aldridge, Los Angeles County, and Hugh J. Multer, Huntington Park, Calif. Filed November 16, 1926. Serial No. 148,730. 7 Claims. (Cl. 196—40.)

1. A process of separating acid reaction products from an oil which has been treated with sulphuric acid, comprising, passing an acid treated oil containing sulpho-acids in the form of peppery sludge, through a series of foraminous blocks containing capillary passages, to agglomerate the sulpho-acids contained in said oil, causing said agglomerated sulpho-acids to separate from the oil in stages, and removing the separated sulpho-acids from the oil continually as separated.

DEHYDRATE OILS

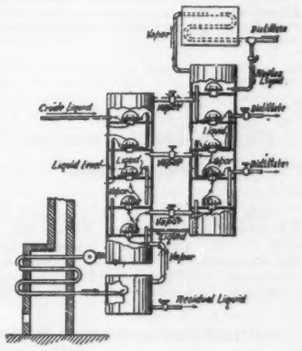
1,739,834. Method of Dehydrating Oil. Earle W. Gard, Long Beach, Blair G. Aldridge, Los Angeles County, and Hugh J. Multer, Huntington Park, Calif. Filed November 16, 1926. Serial No. 148,731. 5 Claims. (Cl. 196—4.)

1. A process of dehydrating and separating solid foreign bodies from an emulsified oil which comprises, first washing the emulsified oil with water to separate the solid foreign bodies, then heating the emulsified oil substantially free of said solid foreign bodies, and passing the same through a series of solid foraminous blocks containing capillary passages to gradually agglomerate the water content contained therein and continually collecting and removing the agglomerated water in stages.

TAKE SEVERAL STREAMS

1,735,558. Rectifying Process. Malcolm Phillip Youker, Bartlesville, Okla. Filed July 15, 1924. Serial No. 726,106. 11 Claims. (Cl. 196—72.)

1. A method of distilling a liquid composed of several hydrocarbons which consist in fractionally vaporizing said liquid under countercurrent contact between



liquid and vapor, separately removing a plurality of said vaporous fractions, and simultaneously rectifying and thus fractionally condensing a part of said fractions by introducing the same at spaced elevations into the same stream of downwardly flowing reflux, and separately removing said several condensates.

HEAT OIL WITH MOLTEN METAL

1,732,664. Apparatus for Cracking Oils. Sigbert Seelig, Berlin, Germany. Filed December 29, 1926. Serial No. 157,828, and in Germany March 25, 1926. 3 Claims (Cl. 196—70.)

1. In an apparatus for cracking oils and the like, a reaction vessel adapted to be externally heated and to contain a charge of molten metal, a continuous spiral tube annularly spaced from the inner walls of said chamber and disposed within said chamber in a position adjacent said walls, said tube being adapted to contain a fluid circulating therethrough to retard the flow of heat from said walls to the interior of the vessel, and means to conduct oil to be treated into said vessel.

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Weather Depresses the Chicago Market

Snow Turning to Rain Makes Roads Outside the Towns Impassable. Rush for Furnace Oil Over for the Present

By J. B. Waldo

CHICAGO, Dec. 23.—Weather conditions show no improvement today as snow is falling which in some parts is turned to rain by mild weather. The gasoline consumption is restricted to the cities and towns as the soft roads are generally impassable. There was very little spot demand Monday and even the contract customers are slow in giving shipping instructions to some extent. Major refiners have in several instances dropped their price for the U. S. Motor grade to 7 cents. The general spot market is much below this, some gasoline being sold at 6 cents Group 3, and very little moving at any price. Little activity is noted in the higher gravities.

Kerosene is very dull.

The great rush for furnace oil of all grades is over for the present but there is a steady demand and prices are strong on gas and high gravity zero fuel oils, with distillates and the gasmakers oil just about steady as to price. Industrial fuel oils are also in better than the usual demand at this time of the month. What is wanted are the zero oils and these are scarce to buy and prices continue to be marked up by refiners who have anything to offer. These latter are very few. There was considerable inquiry today regarding the position of the fuel oils for January but for the most part the only prices named were for immediate shipment. Local sources of supply are all engaged ahead for some time and the present outlook is for higher prices on all zero fuels of both the furnace and industrial kind.

The attention of local oil men today was directed more to the season's activities than to the oil business, partly because there was so little of the latter right now.

Storms Stifle Gasoline Demand

A blizzard and a snowfall which broke all records since the great storm of January, 1918, stifled the gasoline demand last week while making an active call for furnace and fuel oils. Great difficulty is being experienced in getting deliveries of tank cars, and the full effect of the storm has not been realized yet. The railroads have been tied up in all directions, with even the through passenger trains hours late. The freight service was still crippled at the close of the week as the snow continued to be blown into drifts.

It is not improbable that there will be local shortages of fuel oils and already there have been excited calls for the immediate delivery of cars at many points in the territory. It will be some time before the roads will be able to dig out from under the blanket of snow and make even fairly prompt deliveries.

The larger city distributors are at least fairly well supplied with industrial and domestic fuel oil. In fact, some of them were complaining regarding the number of cars that refiners were shipping to them during the mild weather. One of the largest of the local distributors stated last week before the blizzard that as a result of the activities of his refiners, whom he characterized as "fair weather shippers," he had 70 cars on the tracks. He is not complaining now of the quantity of oil that he has on hand.

Result of Freight Differentials

There was a distinct slowing up in the gasoline demand all of last week. One reason for this is undoubtedly the early buying by jobbers of the offerings made through marketers of a large quantity of gasoline of the U. S. Motor grade by the Indian Refining Co., out of Lawrenceville. Some cars of this material were still in the hands of the marketers late last week and probably a few cars are still awaiting a buyer. The prices quoted for this gasoline were not due to the low price made by the refinery. The lowest price at which the gasoline was sold netted the refinery better than a cent a gallon more than the price at which competing material was being offered at the time, out of the group. These low quotations were made to buyers in certain parts of the territory where the freight differentials gave the Illinois gasoline a great delivered price advantage over the Group 3 quotation for similar material.

The gasoline was a high-grade product and compared favorably with that of any refinery in the West. But the jobbers are having a greatly reduced distribution and the gasoline purchased will last them a great while longer than it would have done had the demand from motorists been larger.

The portion of the territory in which the gasoline was most largely sold included practically all of Indiana, eastern Michigan, western Ohio and eastern Illinois. This is a part of the territory where the number of cars is large and the usual consumption compares favorably with that of any part of the country the year 'round.

Road Conditions a Factor

The seasonable slackening in gasoline demand was increased by the bad road conditions. Before the blizzard came to block many highways completely, the main highways were too slippery for travel, for the average motorist. Salesmen who have been up in the northern parts of Wisconsin and Michigan stated that they saw few cars out and that the soft roads were in bad shape.

With a decreased outlet the jobbers have not needed material. Those who purchase in the spot market have bought little and even the contract customers of the larger refiners have reduced their takings or asked that the shipments of parts of the monthly commitments be held at the refinery until the jobber is in position to take in the gasoline.

The price structure was weak. U. S. Motor gasoline was and is being freely offered at 6 cents to jobbers by certain refiners and the price to marketers, which began the week at that figure, has declined until the marketer can sell at that price and still make a profit. Not all of the offerings have come from the smaller refiners. Some large operators in Oklahoma and North Texas have offered U. S. Motor gasoline at 6 cents for immediate acceptance with deliveries extending over the remainder of the month.

There was some effort made to hold the U. S. Motor market to spot buyers in this city at 6½ cents but sales below that figure were commonly made two weeks ago. Then the price of 6¼ cents was held for a few days, but this price was undermined by the low quotations made as the result of the free offerings, and right now the best that the average oil man in this city outside of the sales offices of the major refiners hopes for is that the price will not go below 6 cents.

No Advantage Seen in Price Cuts

The major refiners who are holding to their 7¼-cent price for U. S. Motor gasoline, Group 3 basis, admit that the average jobber can buy so far below their figure that there is no real use in trying to meet the prices named by reductions of one-quarter or one-half cent from their quotation. With quotations freely made of 1 cent below their market, minor price cuts would not bring in any substantial increases in orders. They would only make the condition more obvious than it is today.

Thhis is the season of the year when the average oil man will admit that it is not in the cards for the refiner to make a profit every month of the year on a seasonable product. There are some who seem to think that the smaller refiners are in a precarious condition, but this is not true of many of them. In fact, many of the smaller refiners have placed themselves in a good financial position during the last two years when their summertime profits have much exceeded their winter-time losses, if there were any. The higher prices for gasoline obtained by refiners during the summers of 1928 and 1929 have placed some of the minor refiners where they really have no trouble to carry on their business.

Good Time to Build Reputation

Some of these smaller refiners are finding that the present is a good time to build up a reputation for the quality of their material and the efficiency of their service. There is nothing in the present situation to indicate that any change is contemplated in the present refining plans of either the minor or major refiners. This means that the market may drift along until the spring buying season.

There are usually large jobbers who purchase gasoline at the low of the market which is common in December. There have been a few inquiries, but, if there has been any such buying, it has not been generally known and several have stated that they would not follow their custom this year and place orders for storage during December. They are taking some chances of a market advance but they seem to believe that they will be able to buy as cheaply after January 1 as at present.

In the territory around Detroit there is the intense competition and some public business was recently taken at low prices as the result of competition between the local refiners and those in other refining centers both in Ohio and out of it. The higher tests here have shown some activity and prices have been strengthened by some buying for export for January shipment, but the feeling here is that this buying will make little difference in the U. S. Motor market and may stimulate refining activities instead of slowing them down.

The demand for the higher tests has given way to a great extent to the antiknock gasolines and particularly to the Ethyl gasoline which has become so popular with motorists that refiners who had established a reputation for their own antiknock gasolines have adopted the Ethyl gasoline in its stead.

Kerosene Dull

Kerosene has been dull, neglected and easy as to prices. There is only a sort of filling-in demand right now and no promise of any improvement for another three months when the spring plowing season will begin.

The sudden cold wave and blizzard speeded up the demand for domestic and industrial fuel oils. Zero material is hard to buy for the future and when it is coming on contracts with refiners it is hard to get prompt deliveries. Apparently many of the refiners have actually oversold their output. One reason for the condition is that the distributors have been slow to take out their contracts. They have not needed the oil, many of them have had no place to put it and, as the result, they have been slow to give shipping instructions. In some cases, the refiners have sold this material which they could not ship and which had become a burden to them to spot buyers and now are filling orders as the material is run. Even the home owners and the manufacturers have seen no reason why they should order fuel oil which they did not need.

Now comes a rush of orders from the consumers. They may have nearly as much oil in their tanks as they did a week ago, but it is going fast. The result is a demand for immediate delivery and on top of this the heavy snow reduces the efficiency of the delivery system. The dealer begins to call for oil and as he sees the oil going out fast he becomes more pressing on his refiner or tank car distributor and wants immediate delivery, when instead of the four days under good conditions it may take 10 days to get the cars through from the refinery.

Insistent Demands All Along the Line

As the result of this rush, there is almost a condition of chaos in the fuel oil business. A refiner may have a dozen cars that he can ship, but he will have two or three times as many customers asking for immediate shipment and the condition is repeated all down the line to the actual user who is insisting that a delivery be made at his home or plant.

The most wanted materials right now in this market are a good zero gas oil and a good zero 18-22 fuel oil. There is an active demand for every item in the list of fuel oils, but these two are the most largely consumed and in the most active immediate demand. The 28-30 zero fuel oil is also badly wanted. Marketers and tank car dealers who have been looking ahead of their immediate business have tried near and far to find additional supplies, but they have met with little success. Most refiners simply reply that they are sold up for December and have such heavy orders booked for January that they have no fuel or gas oil to offer for these months.

Some of the refiners offer their heavy residual oils ranging from 12 gravity down to 8 gravity. These oils are not usuable with ordinary equipment and not suited to many processes of manufacture. Some of them could be blended if the lighter material were to be had, but this blending requires skill and equipment which only an occasional distributor possesses. It may come to the point where a distributor who caters to a large line of customers using many different grades of fuel oil will be best able to serve his trade by blending his fuel oils.

Demand for Distillates Increases

The demand for distillates has increased with the other products but the supply has been more nearly adequate to the demand. The chief trouble here has been delayed deliveries. Prices are firm, but only a limited number of refiners have advanced the quotations.

In the gas-oil group the straightrun oils show but little result from the colder weather, prices remaining just about where they were. Undoubtedly the output of the gas plants will be increased but most of the gas companies have supplies either in storage or available and they are refusing to pay the higher prices asked. Business is slow in gas makers oil.

All of the zero gas oils are strong in this market. The demand is pressing and the supply light. The situation right now would not be so bad if the orders placed with refiners could be filled promptly.

There is little 32-36 straw gas oil to be had at any price and for the darker zero gas oils the bottom of the market at this time appears to be 3¼ cents. Some sales have been made at 3½ cents for desirable materials. A good 30-34 oil is worth almost as much as the full 32-36 if the other specifications are right.

(Continued on Page 212)

Heating Oils Alone Strong in the East

General Softness in the Markets for Gasoline and Lubricating Oils. Eastern Area Suffers From Weather Conditions

By A. E. Mockler
New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, Dec. 23.—Softness has enveloped the East Coast refined products market to a considerable extent, gasoline, lubricating oils, paraffin waxes, and gas oil showing weakness, with a number of downward price revisions. Domestic heating oil has been the outstanding feature on the strong side of the market, quotations being marked up on the 36-40 gravity oil.

General price shading on gasoline is now reported from several principal jobbing points in the territory, and it appears to be merely a question of time before a general reduction of a quarter cent is put into effect. It is more or less a question of meeting competition now in many transactions, and this situation is generally the forerunner of a market break.

Preholiday quiet is having its effect upon a number of products. Distributors and consuming manufacturers in most instances are inclined to limit their purchases to bare requirements, not only to facilitate their year-end inventory, but to bolster their cash position.

A better all-round condition among refiners is indicated this year by the comparative absence of forced sales on various products. Normally, a number of refiners at this season, anxious to liquidate part of their surplus holdings for the benefit of their December 31 financial showing, come into the market with stocks which they are willing to market at concessions from prevailing price levels. This year there has been little or no selling of this character, somewhat to the surprise of some buyers who had been deferring purchases in the expectation of "soft spots" appearing in the market during the closing half of December. Current weakness in gasoline, of course, cannot be attributed to this year-end liquidation, but is the natural result of seasonally falling consumption, growing competition, and heavier receipts of motor fuels from other refining territories.

Tank Car Gasoline

The market is exhibiting some signs of nervousness, and the present quoted price level of 8¾ cents is being seriously threatened by price cutting reported in numerous quarters. Reports of business going through in the local market at 8⅝ cents, tank car basis, are fairly frequent, and rumors of sales as low as 8½ cents for U. S. Motor are also heard. In nearby markets, particularly Boston and Philadelphia, price shading is likewise prevalent. This is a normal condition, in view of the unfavorable weather and the steadily growing receipts of California and South American gasolines, but leading interests are closely watching for violations of the industry's code of ethics. Some informal allegations of breaches of the code's provisions are already being heard, but it is doubtful if these "subsurface rumblings" will develop into anything in the nature of formal complaints.

Offerings of U. S. Motor as low as 8¼ cents in barges at "North Atlantic" are reported locally. The barge market has been the center of competition in the jobbing market all year.

California U. S. Motor was reported offered this week at a price figuring out 8¼ cents, laid down in New York, but the cargo reported available at this figure was not closed, up to the time of writing.

U. S. Motor is reported available at the Gulf at 7⅜ cents, which would figure out, roughly, between 8⅜ and 8½ cents, laid down at New York, an unattractive level in view of the current unsettled conditions.

Jobbers are again down to a hand-to-mouth basis, not only because of the unsettled market condition and slackening consumption, but from a desire to hold down inventories and so bolster up their cash showing at the end of the year. In most instances, jobbers are carrying barely sufficient gasoline at their bulk terminals to take care of two or three days' requirements, and falling back on the old plan of keeping a car rolling to insure replenishment of supplies when needed. This policy is expected to hold through January and February, unless the market should develop a definite price move toward lower levels.

Tank Wagon Gasoline

Premium gasolines are furnishing the bright spot in the tank wagon market. Sales are climbing steadily, and refiners and marketers are experiencing no difficulty in maintaining their prices. This has been true throughout the year, the market for premium motor fuels so far as the better known brands are concerned, having remained free from the price cutting tactics which have at times characterized the marketing of U. S. Motor gasoline.

Competition continues keen on U. S. Motor, but thus far, weakness has not been sufficient to affect the general tank wagon and service station price basis. There are growing indications of a probable cut of a cent on U. S. Motor after the turn of the year, reflecting current easiness in the refinery situation and growing competition for retail outlets.

Newcomers in the New York marketing territory are reported making strong bids for independent dealer outlets, and established marketers are watching the situation closely, prepared to invoke the provisions of the code of ethics to maintain their distributive connections, if necessary.

Cold and rainy weather over the greater part of the East has continued, and a slow falling off in gasoline consumption. This is a seasonal condition, however, and refiners are not alarmed. Current sales are still ahead of those for last year at this time, and the principal factors in the New York and New England area, as well as those operating in the South Atlantic states, will show a substantial increase in their year's sales totals.

The tendency among large refiners and marketers to build up their retail distribution through the acquisition of filling stations continues evident, and it is expected expansion in this direction will be one of the big features in the Eastern market during the coming year.

Gas Oil

Changes are lacking in this branch of the market. The principal seller is maintaining a posted price of 5¼ cents for 28 plus recycled oil, but the bulk of the current business is being done at 4¾ to 5 cents, in bulk, at local refineries. There is a fairly heavy volume passing with the large artificial gas companies in this area, weather conditions during the past week having been favorable to heavy consumption of gas.

Low grade gas oils have been benefited by the increasing call for furnace oil, and stocks are moving readily into distribution through jobbing channels at firm prices.

Furnace Oil

Domestic heating oils have worked into firmer position, and the tank wagon market for 36-40 oil in this area has been advanced a half cent to 9½ cents by principal refiners. Other grades are also firming up, with indications of further fractional price advances in the near future.

Consumption of domestic heating oils in the Eastern area has run into record totals thus far, and current indications are that volume on these oils during the first quarter of 1930 will go still higher. There has been a considerable increase in the number of burner installations in the East, which is being reflected in oil sales.

Kerosene

Consumption of kerosene is being well maintained throughout the Eastern territory, and the market for 41-43 water white continues well held at 7¾ cents at refineries. Kerosene, in fact, appears to be showing more strength in the current market than motor fuel.

Tank wagon kerosene is steady and unchanged. Leading marketers report that sales totals have mounted steadily during the current month, weather conditions developing a greatly increased consumption. Refiners and marketers look for a continuance of the present firm market well into the spring. The tank wagon market in New York State is now closing its second consecutive year at the 15-cent level, a degree of stability rather unusual in such a highly competitive marketing area.

Fuel Oil

Contract withdrawals are well sustained, and the market remains steady at $1.05 per barrel in bulk, f.o.b. refinery terminals. Refiners' delivery schedules were considerably upset by the heavy fog which blanketed New York harbor for several days, virtually tieing up shipping.

Refiners have succeeded in lining up their contract business for 1930, and forward contracting has slowed off. The great bulk of the business, that covering the principal marine companies, was already on the books in the form of three-year contracts taking in deliveries for the years 1928-1930 inclusive. Industrial business, however, was not under these long term contracts, and it is this volume that refiners have been working on for the past few weeks.

The outlook does not favor any early price change in bunker oil in the East, increasing receipts from South America militating against any possibility of a price mark-up which might result from the curtailment in domestic output.

Diesel Oil

Volume of business has been well maintained in this division, and the market remains steady at $2 per barrel, bulk, at terminals. A good amount of 1930 business has been booked at $2 to $2.10, refineries, the latter being the top price in the contracts, and the great bulk of this business is now out of the way.

As has been the case during 1929, refiners anticipate a steadily growing volume of spot business during 1930, as more new Diesel-powered vessels go into service. Refinery stocks of Diesel oil in this area are not heavy, and current production is pretty evenly balanced with consumption. Arrivals of regular shipments from California are moving into consumption without any disturbance of the price basis here.

Lubs

Cylinder stocks have eased off again, and business remains rather slack. Bright stocks, dark, are down to 50 to 51 cents per gallon, in barrels at Bayonne, reflecting a further decline in the refinery basis, and light bright stocks are off at 52 to 53 cents per gallon. Steam refined stocks have not shown any price movement, but trading is limited, and the undertone is still soft.

While spot business continues slow, there has been considerable contract business for 1930 put through. Some forward business has been written for the full year, although the bulk of the contracting has been for the first half year only. This business is not written at specific prices, the contract providing for the establishment of a price for each month, based upon the spot market.

Red and pale oils, while quiet are showing continued firmness. New business on spot was not of impressive proportions, and contract withdrawals also slowed down a little.

Wax

Declines of an eighth cent per pound are reported on all melting points of fully refined this week, under continued light trading. Refiners are not showing much in the way of selling pressure, but are endeavoring to get the market on a trading basis.

Domestic consuming manufacturers are virtually out of the market for the balance of the year in many instances, and export markets are almost as quiet. Crude scale has come in for a better call for shipment abroad, however, and prices are showing a little more strength.

Petrolatum

Prices remained unchanged on both the white and amber grades, and trading continues along routine lines with both the domestic and export trades.

Refiners have booked a substantial volume of business for shipment after the turn of the year, and the trade expects an early revival in trading in the new year.

Export Markets

There have been no developments of importance in the Gulf market, both kerosene and gasoline remaining dull, so far as cargo business is concerned. Gasoline, both bulk and cased, has moved fairly well at East Coast terminals, however, and the same is true of kerosene. The latter, in fact, has been more active in an export way than for several weeks back. Business, while generally confined to relatively small quantities, has nevertheless run into substantial totals in the aggregate, and the market tone is quite steady.

The market for Panuco crude appears at a stalemate. With last sales for 1930 delivery oil having been made at 71 cents per barrel at Mexican terminals, exclusive of tax, sellers have now advanced their ideas to 85 cents per barrel, less tax, at which level buying interest has fallen off. One European buyer, who came into the market during the previous week for 50,000 tons (325,000 bbls.) for 1930 delivery, withdrew his bid after failing to secure any quotations better than 78 cents per barrel on the business. Buyers in this country, as well as European operators, are believed to be deferring further purchases until the price situation in Mexico adjusts itself.

Bunker fuel oil is reported available at the Gulf in cargo lots at 68 cents per barrel, bulk, with but little business being done.

Sales of paraffin wax for export have fallen off sharply, and the market has eased off further, reflecting this condition. In the face of large supplies at refineries, holders have been unwilling to meet the bids of export operators, and the latter appear to have withdrawn from the market temporarily.

Lub oil sales for shipment abroad, so far as cylinder stocks are concerned, have likewise shown a decline. With bright stocks trending toward lower price levels,

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Natural Gasoline Manufacture

FACTORS IN THE DESIGN OF CENTRIFUGAL PUMPS

By J. S. Dunn
Columbian Gasoline Corp.

The centrifugal pump consists of two major parts: a fixed casing with stuffing boxes, bearings and a rotating member consisting of the shaft on which is keyed one or more impellers, depending on the type of pump. The impeller is sometimes called runner or wheel. In the early stages of the development of the centrifugal pump the single stage pump was used only for large volumes of liquid at low heads. Manufacturers and engineers were not content with the limited application of the centrifugal pump and were constantly experimenting with new designs and types in an effort to enlarge its field of usefulness. During the period of this experimentation the centrifugal pump was gradually increased and today there is a centrifugal pump available for practically every service and for all capacities and heads up to 1,500 feet.

Centrifugal are divided into two general classes or styles: the single-stage pump for low and medium heads and the multi-stage pump which employs two more impellers in series operation to multiply the head. To illustrate this, let us take a four-stage pump operating with 440 feet discharge head. The suction or No. 1 impeller would raise the liquid from suction to 110 feet, at which head it would be discharged into No. 2 impeller, which would add another 110 feet. Then No. 3 and No. 4 will raise the liquid to 440 feet head.

Terms Used

The terms universally used in centrifugal-pump practice are: head, capacity, brake horsepower and efficiency. The basic law of centrifugal pump operation is centrifugal force, which is a function of mass and the square of velocity. The impeller is the heart of a centrifugal pump. Size and type of pump are minor factors, with speed, head and capacity as the major factors of impeller design. The liquid to the pump determines whether the open or closed impeller should be used. The type of impeller can also be expressed as the ratio between inlet and outlet diameters or as the ratio of impeller diameter to width of impeller at the discharge.

The motor speeds for 60-cycle motors which for the most part are used for driving centrifugal pumps are 900, 1,200, 1,800 and 3,600 revolutions per minute. On account of weight and cost it is desirable to use the high-speed motors whenever possible. When 12-inch pumps are used they can be driven by 1,800 revolutions per minute except where the pumping head is relatively low. For pumps larger than 12-inch there are very few instances where 1,800 revolutions per minute will comply with this requirement and it will be found that 1,200 revolutions per minute, or even lower speeds, are better selections.

With a fixed speed in revolutions per minute, the head remaining the same, the specific speed will increase with the size of pump since the capacity in cubic feet per second also increases with the size of the pump up to and including the 10-inch pumps. The straight-vane impeller will meet the requirements of good efficient design for most conditions of service. The higher specific speeds for pumps of 12-inch and above require an impeller having a low pick-up loss at the suction entrance.

LARGE CALIFORNIA PLANT

LOS ANGELES, Calif., Dec. 21.—The Los Nietos Producing & Refining Co., an affiliated company of the Petroleum Securities Co., is building a large natural gasoline plant close to the Felix No. 1 well of the Petroleum Securities Co. in the Kettleman Hills Field of this state. The plant which will be completed shortly after the first of the year will have a capacity of 100,000,000 feet of gas daily.

The plant is expected to have sufficient capacity to take care of the gas from several wells.

PLAN TO REVISE A.R.A. TANK CAR REQUIREMENTS

A meeting of the Sub-Committee on Tank Car Specifications, American Railway Association, will be held at 30 Vesey St., New York, January 7, 8, 9 and 10 to prepare revision of the association's tank car specifications. It is hoped to complete the revision to submit for committee approval early in February and to make it effective March 1, 1930.

The American Petroleum Institute is represented on the sub-committee by J. J. Root, of the Union Tank Car Co., Chicago, and Thomas Beaghan, Jr., Mexican Petroleum Corp., New York.

Plans also are being made for a joint conference of representatives of the American Railway Association, American Petroleum Institute and Manufacturing Chemists Association to discuss a resolution adopted at the last annual meeting of the Mechanical Division, American Railway Association. This resolution requires application of cast steel side frames to trucks of tank cars when new tanks are applied to existing underframes.

The conference probably will be held during January at Chicago or New York.

Who's Who
IN NATURAL GASOLINE MANUFACTURE

THE TEXAS COMPANIES

The Texas Corporation, through its operating subsidiaries, The Texas Company of Delaware and The Texas Company of California, is one of the largest manufacturers of natural gasoline with a total capacity in excess of 500,000 gallons daily. The first named company has charge of the company's operations in the Mid-Continent area and the latter in California.

While the Delaware company has never stressed natural gasoline manufacture as much as some other phases of its operations, plants have been installed from time to time at scattered points in the Mid-Continent area over the past several years and at present 19 plants are in operation in Oklahoma, Kansas, Louisiana and Texas. The capacity of these plants totals 178,600 gallons daily.

These plants are operated as a part of the crude oil production operation and are under the general supervision of the division managers of the production departments. Within these divisions are departments which devote their time exclusively to the construction and operation of plants. The company is not a large buyer of casinghead gas from leases owned by other companies, the bulk of the gas supply for plant operation coming from company-owned leases.

California Operations

More attention is paid to natural gasoline plant operations by the California company. Operations started about three years ago when The Texas Company acquired the California Petroleum Corp., including its subsidiary, the California Gasoline Co. The latter had been a large manufacturer of natural gasoline for some time.

Since the acquisition by The Texas Company of California in line with the trend of other large companies, natural gasoline plant operations have been further expanded. Twelve plants are now in operation with a combined capacity of 367,500 gallons daily. This includes the 120,000-gallon production of the Santa Fe Springs plant, one of the largest operating units in California.

The operation of the California company centers in the general offices at Los Angeles. H. H. Maddren is general superintendent of the natural gasoline division, and R. T. Herndon, sales manager. The headquarters for the Mid-Continent operations are located at the general offices in Houston, Tex.

Marketing

Due to the fact that The Texas Companies are now operating 20 refineries with a combined capacity of 215,000 bbls. daily outlets for the natural gasoline operations are assured. These refineries are located at scattered points in the United States. Although some of these refineries are large users of natural gasoline the company from time to time is both a buyer and seller of natural gasoline. No special sales department for natural gasoline is maintained in the Mid-Continent area. During the past year the California company has shipped large quantities of stabilized nat-

(Continued on Page 216)

A PRACTICAL SUGGESTION

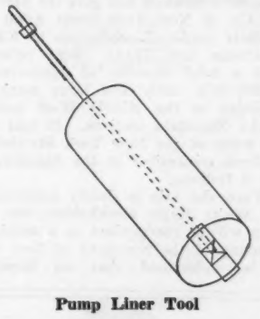
PUMP LINERS

For handling large quantities of liquids, the piston pumps are being replaced by rotary and centrifugal pumps. However, for many purposes in a gasoline plant, the piston type is extensively used. The piston pump may be direct acting, single or duplex, vertical or horizontal, powered by steam or high pressure air or gas; or power pumps which are generally operated by the application of power on the crank, which is transmitted through the connecting rod, and crosshead to the piston or plunger.

Practically all piston pumps are fitted with brass or bronze liners, removable or sleeve type. Reference here is given to installing new sleeve type liners which to a novice is sometimes an exceedingly aggravating job.

The worn liners are of no further value except as junk and no particular precautions need be exercised in removing them. The simplest method is to unflange pipe connections and remove the entire piston end of the pump. The liners are ripped through their entire length. They are first cut by a sharp chisel or diamond point and finished by a larger sharp ended rod like a wrecking bar.

Most sleeve liners have a slight taper on one end which is for starting. This end of the liner is started in the pump cylinder and may be forced slightly by placing a soft wooden block over end and tapping with a small hammer lightly. an end a bar, slightly longer than the diameter of liner. This bar pulls the liner in when the nut on the other end of bolt is tightened. When in place the end of the liner is dressed up by a file so that the piston packing is not damaged when installed.



Pump Liner Tool

The liner is then pulled in place by the tool or device shown in sketch. The tool is essentially a long bolt carrying on

Practical suggestions by those connected with the construction and operation of natural gasoline plants are invited. Payment will be made as soon as suggestions are accepted. Address all communications to the Natural Gasoline Department, The Oil and Gas Journal, Tulsa.

Theoretical Capacity of Pumps at 100 Feet Travel of Piston*

Diameter of pump in inches	Gallons per Minute	hour	24 hours
2	16.31	979	23,500
2½	25.5	1,530	36,720
3	36.7	2,202	52,878
3½	49.9	2,998	71,971
4	65.2	3,916	94,002
4½	82.6	4,957	118,971
5	102	6,120	146,880
5½	112	6,745	161,934
5½	123	7,404	177,696
6	146	8,812	211,511
6½	172	10,344	248,256
7	200	11,995	287,884
7½	229	13,769	330,478
8	261	15,667	376,011
8½	294	17,688	424,512
9	330	19,828	475,887
9½	368	22,092	530,208
10	408	24,480	587,518

*For a duplex pump the capacity should be doubled.

RULE ON OPERATION OF TEXAS NATURAL GAS WELL

The Railroad Commission of Texas, acting on the advice of the attorney general's department of the state, in an announcement of last week stated that it would enforce the state law which forbids the operation of natural gas wells to secure the natural gasoline that the gas contains. The attorney general's department has stated that the law is constitutional and can be enforced.

The announcement was made in connection with the refusal of the Commission to grant a permit to the Navajo Oil Co. which sought permission to operate a gasoline plant in Carson County of the Texas Panhandle, with gas coming from a well which did not produce crude oil. The Commission in effect held that a market for the natural gas must be found before the permit could be granted. This is in line with the state law which seeks to prevent a waste of gas from natural gas wells.

The ruling has no bearing on permits from which both oil and casinghead has been obtained. It was held that the matter of whether or not a well was operated for oil was a question of fact to be determined by the court or Commission. The commission has authority to prevent the escape of all natural gas except such portion as may be necessary in drilling and operating wells.

Brief Items for Petroleum Refiners

MARKETING CODE STUDIED BY BRITISH OIL CONCERNS

NEW YORK, Dec. 21.—Adoption of a code of marketing practices, similar to that developed by the American petroleum industry, has been recommended to British oil companies.

W. H. Howe, president of the National Lubricating Oil & Grease Federation, speaking at the organization's annual dinner in London, urged members to read the American "code of ethics, as it is undoubtedly a declaration of fair and good practice that might be adopted in this country."

"Especially is that so in regard to the vexed question of free equipment," Mr. Howe said. "Why is it that with such a splendid product as lubricating oil it is found necessary to descend to such methods as the giving away of tanks, pumps and other equipment as an inducement to purchase? It is like giving a van of furniture with a pound of tea!"

NEW CONTINENTAL STATION

The Continental Oil Co. is building a new bulk and service station at Tessville, Ill., which will be used in serving the Chicago area. At present the Chicago section obtains its supplies from the bulk station at Hammond, Ind., built several years ago by the Marland Oil Co.

The new bulk station will include a two-story building with adequate storage. The Continental will shortly start the construction of two superservice stations at Washington, D. C., and Newark, N. J. Smaller stations are to be built at several points after the first of the year.

CITIES SERVICE BUYS STATIONS

CHICAGO, Dec. 21.—The Mutual Oil Co., of Adrian, Mich., a subsidiary of the Cities Service Oil Co., has purchased the distributing business of the Battle Creek Oil Co., of Battle Creek, Mich. This company operates one bulk and four service stations. The Mutual Oil Co. has also bought the distributing business of West & Welsby of Wayne, Mich. The Mutual Oil Co., previous to its purchase by the Cities Service Oil Co., was the distributor for Shell products in southern Michigan. It will hereafter handle the products from the new Empire Refinery at East Chicago.

NEW REFINERS BUILDING

A separate building for the display of refining and marketing equipment will be built next year in time for the International Petroleum Exposition and Congress to be held in Tulsa October 4 to 11, according to an announcement by D. D. Wertzberger, chairman of the buildings and grounds committee.

The new building which will be 60 by 240 feet will be similar in design to the Texas and Oklahoma buildings. Work will start early in 1930.

The exposition officials have planned for some time to have a separate building for the refining and marketing branches so that this phase of the exposition will be comparable to the producing and transportation branches. A large number of companies have indicated their intention to take display space in the new building.

Several other additions and improvements are being made at the exposition grounds.

NEW YORK STANDARD TO ACQUIRE WHITE EAGLE PROPERTIES SOON

Confirmation of the sale of the properties of the White Eagle Oil & Refining Co. to the Standard Oil Co. of New York a transaction which has been under way for several months became officially available Saturday in an announcement to stockholders by L. L. Marcell, chairman of the board of the former company. White Eagle stockholders in a meeting to

R. R. Irwin
President of White Eagle Oil & Refining Co.

be held at Wichita, Kans., January 27, 1930, will be asked to approve an exchange of stock on a basis of 8½ shares of Standard of New York for 10 shares of the White Eagle company.

The acquisition of the White Eagle properties, one of the strongest independent companies will give the Standard Oil Co. of New York about 4,000 bbls. of daily crude oil production in Kansas, Oklahoma and Texas, three refineries with a total capacity of approximately 18,000 bbls. daily and large marketing facilities in the Middle West and the Rocky Mountain sections. It will mark the entry of the New York Standard as a direct competitor of the Standard Oil Co. of Indiana.

When the sale is finally approved by the White Eagle stockholders the company will be reorganized as a subsidiary company of the Standard of New York. It is understood that no important changes in the White Eagle management will be made. L. L. Marcell, the organizer of the company and well known in oil circles, will become a member of the board of directors of the New York Standard. R. R. Irwin, president, will continue to head the subsidiary company in charge of all operations.

The acquisition will give the Standard of New York a third strong subsidiary organization in the United States. At present the company controls the General Petroleum Corp., a major operator on the West Coast engaged in all phases of the oil business and the Magnolia Petroleum Co., a large producer, refiner and marketer of the Southwest. The parent company for years has been a major refiner and marketer in New York and the New England States.

When the White Eagle properties are taken over, the Standard of New York will have completed another important

L. L. Marcell
Chairman of the board of directors of the White Eagle Oil & Refining Co.

step looking toward national distribution. Through subsidiary companies it will have distribution in all states west of the Mississippi River with large outlets in the extreme eastern states.

A recent check showed that the parent company and its General and Magnolia subsidiaries were operating 12 refineries

(Continued on Page 215)

APEX CO. TO NEW ADDRESS

CHICAGO, Dec. 21.—The Apex Motor Fuel Co. has moved its offices from 3200 S. Western Ave., to 1401 W. North Ave. The Apex Motor Fuel Co. recently sold its warehouse and office building at 3200 S. Western Ave. to the Cities Service Oil Co. which will occupy it shortly after the beginning of the year. The building was formerly owned by the Indian Refining Co., and is equipped with storage tanks for both light oils and lubricating oils and greases. It has a frontage on the south branch of the Chicago River which makes it desirable for its new owners as the Cities Service Oil Co. will be able to barge the products of the refinery at East Chicago directly to the warehouse. The Apex Motor Fuel Co. will probably erect a bulk plant at the new address in the near future. The Apex Co. has a large line of customers in the northwest section of the city which can be readily served from the new address.

CHANGE GULF PERSONNEL

HOUSTON, Tex., Dec. 21.—The Gulf Refining Co. at Port Arthur has made known a number of promotions and changes in personnel recently. L. C. Bock has been made purchasing agent to succeed Charles R. Stevenson, who several months ago was appointed manager of the Port Arthur refinery. Other promotions just made are P. H. Marble, superintendent of construction and repairs; W. F. Prafka, master mechanic; F. C. Peck, assistant master mechanic; G. H. Westbrook, field engineer; H. M. Hoe, office engineer, and R. A. Balaza, draftsman.

SIMMS OIL COMPANY TO DISTRIBUTE "AMALIE"

NEW YORK, Dec. 23.—L. Sonneborn Sons, Inc., of New York, has contracted with the Simms Oil Co. for the distribution of its "Amalie" 100 per cent pure Pennsylvania lubricating oil and "Gas-lube," a lubricating oil for new and overhauled motors, at all points at which Simms stations are operated. Amalie products will be available through the wholesale warehouses operated by the Simms Oil Co. as well as through the service stations operated by Simms. With the Sonneborn arrangement, Simms stations now offer Amalie Pennsylvania motor oils, along with Simms paraffin base motor oils and the other Simms products.

H. J. Cohn, manager of the Sonneborn interests in the southwest, with headquarters in Dallas, announcing the arrangement, said: "The Simms Oil Co., with headquarters at Dallas, is rapidly becoming one of the largest commercial organizations in the Southwest. Its extensive distributing facilities make the present arrangement particularly attractive, as it will place Amalie products conveniently available at all points where the company operates.

"Outstanding in the petroleum industry are two products recently developed in the Sonneborn laboratories. These are Amalie subzero oil, a 100 per cent pure Pennsylvania oil for winter use, guaranteed to flow freely at temperatures as low as zero, F. Its value is enhanced by the fact that it is developed without in any way thinning down the original body of the Pennsylvania oil.

"Gas-lube, for new and overhauled motors, is the other product recently developed by the Amalie laboratories and to be distributed by the Simms Oil Co. It is mixed with the gasoline in the gas tank and serves as an upper motor lubricant, without interference with the performance of the carburetor and without the formation of excessive carbon. It possesses all the advantages for new and overhauled cars formerly obtained by the addition of motor oil to the crankcase and completely eliminates the objections which motor oil possesses for this purpose."

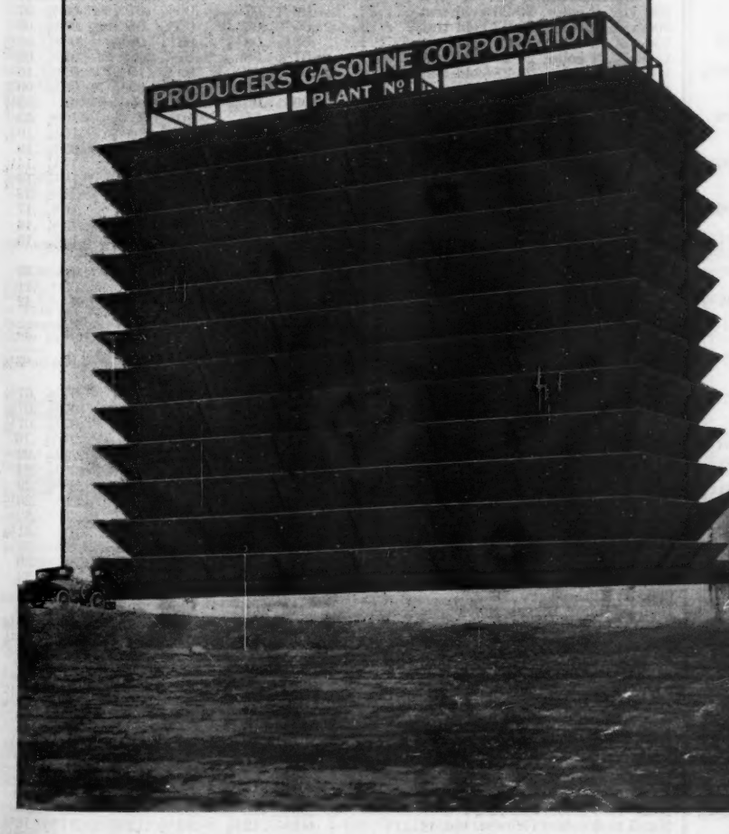
WOLVERINE-EMPIRE MERGE

NEW YORK, Dec. 23.—The Wolverine Lubricants Co. of New York has merged with Empire Oil Works Co. of Oil City and Tidioute, Pa., a holding company known as Wolverine Empire Refining Co. having been organized and owning all Wolverine and nearly 90 per cent of Empire Oil Works stock. E. W. Chase of Oil City is chairman of board of new firm, C. H. Ellingwood of New York, president, F. W. Bar, New York, treasurer, A. W. Scott, Oil City, secretary, and E. S. Smith, New York, assistant treasurer. Headquarters will be in New York and it is understood that expansion program will be developed at once. Wolverine is a large distributor of motor oils in eastern territory.

"CRACKING CLUB" SUIT

CHICAGO, Dec. 21.—At the hearing before the United States Circuit Court regarding the form of the decree to be issued in the so-called "Cracking Club" Suit, in which the government won a preliminary injunction, forms of the decree were submitted by the attorneys for the government and by attorneys for the Standard Oil Co. of Indiana, and The Texas Company, the two latter representing the defendants. The court ordered that briefs be filed within one week.

Colder Water



Closer Wet Bulb Approach
Per Square Foot

FLUOR Towers

represent a logical engineering balance of:

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2. *Operating Costs*
3. *Long Life*
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FLUOR Service

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THE Fluor CORPORATION, LTD.
(Successors to Fluor Construction Co.)

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TULSA, OKLA. National Bank of Commerce Bldg.
NEW YORK, N. Y. 30 Church St.
DALLAS, TEXAS Magnolia Bldg.
HOUSTON, TEXAS 2nd National Bank Bldg.

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

	Dec. 24		Dec. 17		Dec. 10	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.06½	.07	.06¾	.07	.06¾	.07
56-58 450 endpoint	.06½	.06¾	.06½	.06¾	.06½	.06¾
*58-60 437 endpoint (U. S. Motor)	.0725		.0725		.0725	
*60-62 437 endpoint	†.0725		.0763		†.0725	
*60-62 400 endpoint	.0750		.0750		.075	
*64-66 375 endpoint	.08		.08		.0779	
68-70 360 endpoint	.08⅛	.08¼	.08⅛	.08¼	.08⅛	.08¼
64-66 437 endpoint (blend)	.07	.07¼	.07	.07¼	.07	.07¼

*Weighted average prices December 23, 16 and 9 as reported by representative refiners. Sales to jobbers only. †No sales reported.

NORTH TEXAS—						
56-58 450 endpoint	.06¼	.06½	.06½	.06¾	.06½	.06¾
58-60 460 endpoint	.06¼	.06½	.06½	.06¾	.06½	.06¾
58-60 437 endpoint (U. S. Motor)	.06¼	.06¾	.06½	.07	.06½	.07
60-62 400 endpoint	.06¾	.07¼	.07¼	.07⅜	.07¼	.07⅜
64-66 390 endpoint	.07⅜	.07⅝	.07½	.07⅝	.07½	.07¾
64-66 375 endpoint	.07¾	.08	.07¾	.08	.07¾	.08
68-70 360 endpoint	.08	.08¼	.08⅛	.08¼	.08⅛	.08¼
64-66 437 endpoint (blend)	.07	.07¼	.07	.07¼	.07⅞	.07¼
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.07¼	.07⅜	.07¼	.07⅜	.07¼	
***ARKANSAS**						
58-60 437 endpoint (U. S. Motor)	.07	.07¼	.07	.07¼	.07	.07¼
PENNSYLVANIA—						
52-54 Naphtha	.07¼	.07½	.07¼	.07½	.07¼	.07½
54-56 Naphtha	.07¼	.07¼	.07¼	.07½	.07¼	.07½
58-60 Gasoline	.08	.08¼	.08	.08¼	.08	.08¼
60 Gasoline	.08¼	.08½	.08	.08½	.08	.08½
62 Gasoline	.08¼	.08½	.08½	.08¾	.08½	.08¾
64 Gasoline	.08½	.08¾	.09	.09¼	.09	.09¼
68-70 350 endpoint gasoline	.09¾	.10	.10¼	.10½	.10¼	.10½
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.09	.10	.09	.10	.09	.10
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.06½		.06½	.06¾	.06¾	.07
56-58 450 endpoint	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅞
58-60 437 endpoint (U. S. Motor)	.06¼	.06⅜	.06⅜	.07	.06⅝	.07¼
60-62 400 endpoint	.07⅛	.07⅜	.07⅛	.07⅜	.07¼	.07½
64-66 375 endpoint	.07¾	.08	.07¾	.08	.07⅝	.07⅞
68-70 360 endpoint	.08¼	.08⅜	.08¼	.08⅜	.08¼	
64-66 437 endpoint (blend)	.06⅞	.07	.07	.07¼	.07¼	
GULF COAST (Export)—						
58-60 (U. S. Motor)	.08½		.08½		.08½	
60-62 400 endpoint	.09½		.09½		.09½	
61-63 390 endpoint	.09¾		.09¾		.09¾	
64-66 375 endpoint	.10		.10		.10	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

NATURAL GASOLINE

	Dec. 24		Dec. 17		Dec. 10	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06½	.06⅝	.06⅝		.06¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06⅜	.06¼	.06¼	.06⅜	.06⅜	.06½
Grade B, 76-83.9, 375 e.p., rec. 85%	.05¾		.05¾		.06	
Grade BB, 84-92, 375 e.p., rec. 85%	.05½	.05⅝	.05¾		.06	
Grade C, 80-90, 375 e.p., rec. 78%	.05½		.05¾		.05¾	.06
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06½	.06⅝	.06⅝	.06¾	.06¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06⅜	.06¼	.06¼	.06⅜	.06⅜	.06½
Grade B, 76-83.9, 375 e.p., rec. 85%	.05¾		.05¾		.06	
Grade BB, 84-92, 375 e.p., rec. 85%	.05½	.05⅝	.05¾		.06	
Grade C, 80-90, 375 e.p., rec. 78%	.05½		.05¾		.05¾	.06
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.06⅝	.06¾	.06¾	.07	.07	.07¼
Grade BB, 84-92, 375 e.p., rec. 85%	.06¼	.06½	.06¼	.06½	.06½	.06¾
Grade C, 80-90, 375 e.p., rec. 78%	.05¾	.06¼	.06	.06¼	.06¼	.06½
CALIFORNIA—						
75-78 375 390 endpoint	.08	.08½	.08	.08½	.07¾	.08¼
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06½	.06⅝	.06⅝	.06¾	.06¾	
Grade AA, 80-87, 375 e.p., rec. 90%	.06¼	.06⅜	.06¾		.06½	
Grade B, 76-83.9, 375 e.p., rec. 85%	.05¾		.05¾		.06	
Grade BB, 84-92, 375 e.p., rec. 85%	.05½	.05⅝	.05¾		.06	

BURNING OIL

	Dec. 24		Dec. 17		Dec. 10	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.04⅛	.04¾	.04⅛	.04¾	.04¼	.04¾
42-44 water white kerosene	.04⅜	.05	.04½	.05	.04½	.04¾
NORTH TEXAS—						
41-43 water white kerosene	.04⅛	.04¼	.04⅛	.04¼	.04⅛	.04¼
40-42 water white kerosene	.04	.04⅛	.04	.04¼	.04	.04¼
***NORTH LOUISIANA—**						
41-43 water white kerosene	.05		.05		.05	
***ARKANSAS**						
41-43 water white kerosene	.05		.05		.05	
PENNSYLVANIA—						
43 Kerosene prime white	.05¾	.06	.06¼	.06⅜	.06¼	.06⅜
45 Kerosene water white	.06	.06¼	.06⅜	.06½	.06¼	.06⅜
46 Kerosene water white	.06½	.06¾	.06⅝	.06⅞	.06⅝	.06⅞
47 Kerosene water white	.06¾	.07	.06¾	.07	.06¾	.07
300 Mineral Seal	.07	.07¼	.07	.07¼	.07	.07¼
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.05	.05½	.05	.05½	.05	.05½
Engine distillate, 43-44, 445 endpoint	.07	.07½	.07	.07½	.07	.07½
Engine distillate, 42-44, 480 endpoint	.06¾	.07¼	.06¾	.07¼	.06¾	.07¼
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.04⅛	.04⅜	.04⅛	.04½	.04¼	.04½
42-44 water white kerosene	.04½	.04¾	.04¾	.05	.04⅝	.05
GULF COAST (Export)—						
41-43 prime white	.07		.07		.07	
41-43 water white	.08		.08		.08	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	Dec. 24		Dec. 17		Dec. 10	
OKLAHOMA (Group 3)—						
Below 18 Fuel Oil, per bbl.	.70	.75	.70	.75	.70	.75
18-22 Fuel Oil, per bbl.	.75	.80	.75	.80	.75	.80
20-22 Fuel Oil, per bbl.	.80	.85	.80	.85	.80	.85
22-26 Fuel Oil, per bbl.	.85	.90	.85	.90	.85	.90
24-26 Fuel Oil, per bbl	.90	1.00	.90	1.00	.95	1.00
26-30 Fuel Oil, per bbl.	1.00	1.05	1.00	1.05	1.00	1.05
28-30 Fuel Oil, per bbl. (industrial)	1.15	1.25	1.15	1.25	1.15	1.25
32-36 Gas Oil (industrial)	.02⅞	.03	.02⅞	.03	.02⅞	.03
32-36 Gas Oil (straw color)	.03⅛	.03¼	.03⅛	.03¼	.03⅛	.03¼
36-38 Distillate	.03⅝	.03⅞	.03⅝	.03⅞	.03⅝	.03⅞
38-40 Straw Distillate	.03¾	.04	.03¾	.04¼	.03⅞	.04¼
NORTH TEXAS—						
Below 20 Fuel Oil, per bbl.	.60	.65	.60	.65	.60	.65
24-26 Fuel Oil, per bbl.	.85	.95	.85	.95	.85	.95
32-36 Gas Oil (straw)	.02⅞	.03	.02⅞	.03	.02⅞	.03
38-40 Straw Distillate	.03¾	.04	.03¾	.04	.03¾	.04
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.80	.85	.80	.85	.80	.85
30-32 Gas Oil	.03¼	.03½	.03¼	.03½	.03¼	.03½
***ARKANSAS**						
33-36 Distillate	.03⅝	.04	.03⅝	.04	.03⅝	.04
30-32 Gas Oil	.03¼	.03½	.03¼	.03½	.03¼	.03½
16-22 Refinery Fuel Oil, per bbl.	.80	.85	.80	.85	.80	.85
GULF COAST (South Texas—						
Gas Oil	.04	.04¼	.04	.04¼	.04	.04¼
Bunker C Fuel (cargo lots), per bbl.	.65	.70	.65	.70	.75	
Bunker C Fuel (small lots)	1.00	1.05	1.00	1.05	1.00	1.05
PENNSYLVANIA—						
30-34 Fuel Oil	.04½	.04¾	.04½	.04¾	.04⅝	.04⅞
36-40 Fuel Oil	.04⅝	.04¾	.04⅝	.04¾	.04¾	.05
CALIFORNIA—						
33-36 Distillate	.03½	.04	.03½	.04	.03½	.04
26-32 Distillate	.02	.02½	.02	.02½	.02	.02½
15-20 Fuel Oil, Bunker (at tide water)	.70	.80	.70	.80	.65	.85
15-20 Fuel Oil (cargo lots, per bbl.)	.60	.65	.60	.75	.70	.85
27 plus Diesel, per bbl.	.90	1.05	.90	1.05	.90	1.05
CHICAGO DISTRICT (Based on Group 3)—						
22-26 Fuel Oil, per bbl.	.85	.90	.82½	.87½	.80	.85
18-22 Fuel Oil, per bbl.	.80	.85	.75	.80	.70	.75
28-30 Fuel Oil, per bbl	1.25	1.30	1.17½	1.25	1.15	1.20
32-36 Gas Oil (zero)	.03⅛	.03½	.03⅛	.03⅜	.03⅛	.03⅜
32-36 Gas Oil (industrial)	.02¾	.02⅞	.02¾	.02⅞	.02¾	.03
36-38 Distillate	.03⅝	.03¾	.03½	.03¾	.03⅝	.03¾
38-40 Straw Distillate	.03⅞	.04	.03¾	.04	.03¾	.04

*Louisiana, Arkansas, Mississippi and East Texas delivery.

LUBRICATING OIL AND WAX

	Dec. 24		Dec. 17		Dec. 10	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.06¾	.07	.06¾	.07	.06¾	.07
100 vis., 3 color, 20-25 cold test	.05¾	.06	.05¾	.06	.05¾	.06
150 vis., 3 color, 20-25 cold test	.08¼	.08½	.08¼	.08½	.08¼	.08½
150 vis., 4 color, 20-25 cold test	.07¾	.08	.07¾	.08	.07¾	.08
180 vis., 3 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
180 vis., 4 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09¼	.09½
180 vis., 5 color, 23-28 cold test	.09	.09¼	.09	.09¼	.09	.09¼
200 vis., 3 color, 23-28 cold test	.10¾	.11	.10¾	.11	.10¾	.11
200 vis., 4 color, 23-28 cold test	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 5 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
240 vis., 3 color, 25-30 cold test	.14¼	.14½	.14¼	.14½	.14¼	.14½
240 vis., 4 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 5 color, 25-30 cold test	.12¾	.13	.12¾	.13	.12¾	.13
280 vis., 3 color, 25-30 cold test	.16¾	.17	.16¾	.17	.16¾	.17
280 vis., 4 color, 25-30 cold test	.15¾	.16	.15¾	.16	.15¾	.16
280 vis., 5 color, 25-30 cold test	.14¾	.15	.14¾	.15	.14¾	.15
Cylinder Stocks:						
600, steam refined, light green	.10	.12	.10	.12	.10	.12
600, steam refined, dark green	.09	.11	.09	.11	.09	.11
190-200 vis., D color Bright Stock	.41	.42	.41	.42	.41	.42
150-160 vis., D color Bright Stock	.37		.37		.37	
150-160 vis., E color Bright Stock	.32	.35	.32	.35	.32	.35
Waxes:						
124-126 White Crude Scale Wax	.03		.03	.03⅛	.03	.03⅛
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom	.07½	.07¾	.07½	.07¾	.07½	.07¾
36 Miners' Neutral	.07¼	.07½	.07¼	.07½	.07¼	.07½
150, 3 color	.15½	.16	.15½	.16	.15½	.16
180, 3 color	.21½	.22	.21½	.22	.21½	.22
200, 3 color	.23½	.24	.23½	.24	.23½	.24
220, 3 color	.28½	.29	.28½	.29	.28½	.29
600, steam refined	.25½	.26	.25½	.26	.26	.26½
635, steam refined	.30	.30½	.30	.30½	.30	.30¼
650, steam refined	.30½	.31	.30½	.31	.31	.31½
600, Pennsylvania Flash	.31½	.32	.31½	.32	.32	.32½
630, Pennsylvania Flash	.34½	.35	.34½	.35	.35	.36
600, E filtered	.30½	.31	.32	.32½	.32½	.33
600, D filtered	.35½	.36	.35½	.36	.36½	.37
Pennsylvania Bright Stock	.44	.45	.45	.46	.45	.46
*122-124 White Crude Scale Wax	.03	.03⅛	.03	.03⅛	.03	.03⅛
*124-126 White Crude Scale Wax	.03⅛	.03¼	.03⅛	.03¼	.03⅛	.03¼

*At New York.

GULF COAST (South Texas—						
No. 2 color, 100 vis., pale oil	.06	.06½	.06	.06½	.06	.06½
No. 3 color, 200 vis., pale oil	.08½	.09	.08½	.09	.08½	.09
No. 3 color, 300 vis., pale oil	.09¾	.10	.09¾	.10	.09¾	.10
No. 3½ color, 500 vis., pale oil	.11	.11½	.11	.11½	.11	.11½
No. 4 color, 750 vis., pale oil	.12	.13	.12	.13	.12	.13
No. 5 to 6 color, 200 vis., red oil	.07	.08	.07	.08	.07	.08
No. 5 to 6 color, 300 vis., red oil	.08½	.09	.08½	.09	.08½	.09
No. 5 to 6 color, 500 vis., red oil	.09	.10	.09	.10	.09	.10
No. 5 to 6 color, 750 vis., red oil	.11½	.12½	.11½	.12½	.11½	.12½
No. 2½ color, 200 vis., pale filtered	.11	.12	.11	.12	.11	.12
No. 2½ color, 300 vis., pale filtered	.12	.13	.12	.13	.12	.13

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

	Dec. 24		Dec. 17		Dec. 10	
No. 2½ color, 500 vis., pale filtered	.14½	.15	.14½	.15	.14½	.15
No. 2½-3 color, 750 vis., pale filtered	.17	.19	.17	.19	.17	.19
CALIFORNIA—						
130 vis., 2½-3 color	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 2½-3 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
300 vis., 3-3½ color	.13	.13½	.13	.13½	.13	.13½
350 vis., 3½-4 color	.13½	.13¾	.13½	.13¾	.13½	.13¾
400 vis., 3½-4 color	.15	.15½	.15	.15½	.15	.15½
Red Neutral:						
200 vis., 4½-5 color	.11	.11¼	.11	.11¼	.11	.11¼
300 vis., 5-6 color	.12	.12¼	.12	.12¼	.12	.12¼
400 vis., 5-6 color	.13¼	.14	.13¼	.14	.13¼	.14
500 vis., 4½-5 color	.14¼	.15½	.14¼	.15½	.14¼	.15½
500 vis., 5-6½ color	.15	.15¼	.15	.15¼	.15	.15¼
600 vis., 6½ plus color	.16	.16¼	.16	.16¼	.16	.16¼

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Dec. 24		Dec. 17		Dec. 10	
Gasoline, U. S. Motor, 58-60, 437	.08⅝	.08¾	.08¾	.09	.08¾	.09
Kerosene, water white, 41-43	.07¼		.07¼		.07¼	
*Fuel Oil, Bunker "C," 14-16, per bbl.	1.05		1.05		1.05	
†Fuel Oil, Diesel, 28-30, per bbl.	2.00		2.00		2.00	
Gas Oil, 32-36 gravity	.04¾	.05¼	.05¼		.05¼	
25 pale Paraffin Oil	.10½		.10½		.10½	
28 pale Paraffin Oil	.07¼		.07¼		.07¼	
285 red Paraffin Oil	.12½		.12½		.12½	
250 red Paraffin Oil	.11½		.11½		.11½	
225 red Paraffin Oil	.10		.10		.10	
200 red Paraffin Oil	.09¼		.09¼		.09¼	
Refined Wax:						
120-122 a.m.p., per lb.	.03⅞		.038		.038	
125-127 a.m.p., per lb.	.04		.04⅛	.04¼	.04⅛	.04¼
130-132 a.m.p., per lb.	.04⅜		.04½		.04½	
133-135 a.m.p., per lb.	.05⅜		.05¾		.05¾	
135-137 a.m.p., per lb.	.06		.06⅛		.06⅛	
Petrolatum in barrels, carload lots, per pound:						
Dark Green	.01⅞		.01⅞		.01⅞	
Amber	.03⅜		.03⅜		.03½	
Extra Amber	.03½		.03½		.03⅝	
Cream	.06⅜		.06⅜		.06⅜	
Lily White	.07¼		.07¼		.07⅜	
Snow White	.08⅜		.08⅜		.08⅜	

*Lighterage 5.0 cents a barrel extra. †Lighterage 6.5 cents a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Dec. 24	Dec. 17	Dec. 10
Kerosene, prime white	.07¾	.07¾	.07¾
Kerosene, water white	.09	.09	.09
600, steam refined cylinder stocks, in bbls.	.32	.32	.32½
635, steam refined	.34	.34	.34½
650, steam refined	.38	.38	.38½
600, Pennsylvania Flash	.41	.41	.43
630, Pennsylvania Flash	.45	.45	.47
600, Warren E	.40	.40	.40
600, Oil City E	.39	.39	.39
Light 140-150 Bright Stocks	.52 .53	.54 .56	.55 .56
Dark 140-150 Bright Stocks	.50 .51	.53 .54	.53 .54

LOS ANGELES EXPORT PRICES

	Dec. 24	Dec. 17	Dec. 10
Kerosene, water white	.04½ .05	.04½ .05	.04½ .05
U. S. Motor Gasoline, 53-55, 437 e.p.	.06¼ .06¾	.06¼ .06¾	.06¼ .06¾

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Oklahoma City—Same as other Mid-Continent price schedule except Empire Pipe Line Co. posts all oil 40 gravity and above at $1.65 on November 24.
Cersicana heavy (January 11)* ..... $ .80
Other fields ..... See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties—See gravity table.

WEST TEXAS

Iatan* ..... Same as North Texas
Crane-Upton-Crockett, Pecos, Winkler and Mitchell ..... See gravity table, column 3
Howard and Glasscock ..... See gravity table, column 11
Chalk† ..... $ .65

*Includes Westbrook Field.
†Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover, below 24 gravity (May 20, 1929) ..... $ .85
Smackover, 24 gravity and above (May 20, 1929) 1.00
Cotton Valley, below 36 gravity (May 23) ..... .85
Bellevue (May 29, 1929) 1.30
Urania (May 21, 1929) 1.01
East El Dorado (May 22, 1929) ..... .85
Other fields ..... See gravity table

Cotton Valley crude about 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.
Note—Smackover, Cotton Valley and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co.

GULF COAST

Grade A (May 20)* $1.30
Grade B ..... See gravity table
Jennings, La. (March 14)† 1.05
Saratoga, Batson, Dayton (March 14, 1927)‡ 1.20
Refugio¶ ..... .70
Markham (March 14)§ 1.00
High Island (December 14)¶ 1.00
*Humble Oil & Refining Co., The Texas Company, Gulf Pipe Line Co., and Sun Pipe Line Co. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. §The Texas Company. ¶Posted by Gulf Pipe Line Co.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co. (Effective May 21, 1929)

Rock Creek, Wyo. $1.40
Salt Creek ..... See gravity table
Big Muddy $1.43
Grass Creek, heavy (July 27, 1928) ... .90
Grass Creek, light 1.65
Mule Creek 1.20
Elk Basin 1.65
Lance Creek 1.68
Poison Spider (March 14, 1927) 1.00
Notches (March 14, 1927) ..... .65
Rex Lake (February 22) 1.10
Osage 1.65
Lost Soldier (contract, May 22) 1.05
Hamilton Dome (March 14, 1927) ..... .85
Pedro 1.26
Greybull 1.65
Four Bear ..... .85
Cat Creek (Montana) (July 27, 1928) .. 1.48
Sunburst (Montana) (May 23, 1929) ... 1.75
Torchlight 1.65
Hogback (New Mexico) 1.70

Note—Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

(Continued on Page 208)

CRUDE OIL GRAVITY TABLE

Gravity—	1 Okla., Kans., N. C. Texas	2 No. La. and Arkansas	3 Crane, Upton, Crockett, Winkler, Pecos, Mitchell, Texas crudes, and Les. N. Mex.	4 Stephens, Ark.	5 Wheeler (Texas Panhandle)	6 Gray County (Texas Panhandle)	7 Carson and Hutchinson (Texas Panhandle)	8 Salt Creek, Wyo.	9 Grade B and Light Crude (G. Coast)	10 Somerset (South Central Texas)	11 Howard and Glasscock, W. Tex.
24 and above.	....	....	....	....	....	....	....	....	....	....	....
Below 24	....	....	....	....	....	....	....	....	....	....	....
Below 25	.85	....	.70	....	....	....	....	....	1.15	....	.70
25 to 25.9 ...	.90	....	.74	....	....	....	....	....	1.18	....	.74
26 to 26.9 ...	.95	....	.78	....	....	....	....	....	1.21	....	.78
27 to 27.9 ...	1.00	....	.82	....	....	....	....	....	1.24	....	.83
Below 28	....	1.00	....	.90	.90	.90	.90	....	....	....	....
28 to 28.9 ...	1.05	1.05	.86	.94	.90	.90	.90	....	1.27	....	.84
29 to 29.9 ...	1.10	1.10	.90	.98	.90	.95	.90	1.10	1.30	....	.86
30 to 30.9 ...	1.15	1.15	.94	1.02	.95	1.00	.90	1.15	1.33	....	.88
31 to 31.9 ...	1.20	1.20	.98	1.06	1.00	1.05	.90	1 20	1.36	....	.90
32 to 32.9 ...	1.25	1.25	1.02	1.10	1.05	1.10	.95	1.25	1.39	1.05	.92
33 to 33.9 ...	1.30	1.30	1.06	....	1.10	1.15	1.00	1.50	1.42	1.07	.94
34 to 34.9 ...	1.35	1.35	1.10	....	1.15	1.20	1.05	1.35	1.45	1.09	.96
35 to 35.9 ...	1.40	1.40	1.14	....	1.20	1.25	1.10	1.40	1.48	1 11	.98
36 to 36.9 ...	1.45	1.45	1.18	....	1.25	1.30	1.15	1.45	....	1 13	1.00
37 to 37.9 ...	1.50	1.50	....	....	1.30	1.35	1.20	1.50	....	1.15	....
38 to 38.9 ...	1.55	1.55	....	....	1.35	1.40	1.25	....	....	1.17	....
39 to 39.9 ...	1.60	1.60	....	....	1.40	1.45	1.30	....	....	....	....
40 to 40.9 ...	1.65	1.65	....	....	1.45	1.50	1.35	....	....	....	....
41 to 41.9 ...	1.70	1.70	....	....	1.50	1.55	1.40	....	....	....	....
42 to 42.9 ...	1.75	1.75	....	....	1.55	1.60	1.45	....	....	....	....
43 to 43.9 ...	1.80	1.80	....	....	1.60	1.65	1.50	....	....	....	....
44 and above.	1.85	1.85	....	....	1.65	1.70	1.55	....	....	....	....

Column 1, Note—Magnolia Petroleum Co. posted schedule May 20, 1929, making price below 26 gravity 70 cents per barrel, 26-26.9 gravity 75 cents, 27-27.9 gravity 85 cents, 28-28.9 gravity 90 cents, 29-29.9 gravity 95 cents, 30-30.9 gravity $1.05, and 31-31.9 gravity $1.15, with balance of the price schedule as shown above. Top price of Empire Pipe Line Co., effective November 14 for Oklahoma City crude oil, is for 40° and above.
Oklahoma—Carter Oil Co., Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., The Texas Company, May 20.
North Central Texas—Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Nocona and Moran, Prairie Oil & Gas Co., Sinclair Oil Refining Co., Humble Oil & Refining Co., The Texas Company and Gulf Refining Co., May 20.
Kansas—Prairie, Sinclair, The Texas Company and Carter, May 20.
Column 2—Arkansas and North Louisiana—(Caddo, Bull Bayou, Crichton, Cotton Valley above 36 gravity, DeSoto, Haynesville, Homer and El Dorado only) May 23. Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Refining Co., Magnolia Petroleum Co., schedule applies to Pine Island, Haynesville, Bull Bayou, Louisiana and El Dorado, Ark., light crude.
Column 3—Humble Oil & Refining Co. and Magnolia Petroleum Co., May 20.
Column 4—Atlantic Oil Producing Co., Prairie Oil & Gas Co., Louisiana Oil Refining Corp., May 21, 1929.
Columns 5, 6 and 7—Humble Oil & Refining Co., Magnolia Petroleum Co., May 20, 1929.
Column 8—Midwest Refining Co., May 20, 1929. All crude over 37 gravity $1.50 per barrel.
Column 9—Humble Oil & Refining Co., May 20, 1929 (schedule ends 35 and above).
Column 10—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.
Column 11—Humble Oil & Refining Co., November 26.

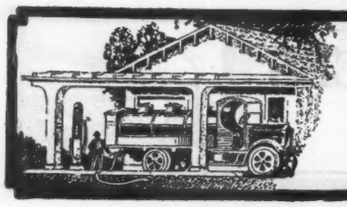
CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective October 31, 1929)

Gravity—	1 Salt Lake, Newport, Summerland, Lawndale, Los Angeles, Fullerton, Richfield, Torrance, Olinda-Brea, Alamitos Heights, Huntington Beach, Signal Hill (Nov. 4) Athens, Inglewood, Rosecrans-Dominguez, Watsonville	2 Whittier, La Habra, Coyote Hills	3 Midway-Sunset, Elk Hills, Lost Hills, Reirdge, Buena Vista Hills	4 Montebello	5 Santa Fe Springs (Nov. 8)	6 Santa Maria, Coalinga	7 Wheeler Ridge, Fruitvale	8 Orcutt, Ventura, Rincon	9 Ventura Ave.* Potrero†	10 Elwood Terrace	11 Seal Beach (Nov. 4)
14 to 14.9 ...	.70	.70	.50	.70	....	.50	.50	.65	.40	....	.70
15 to 15.9 ...	.70	.70	.50	.70	....	.50	.50	.65	.40	....	.70
16 to 16.9 ...	.70	.70	.50	.70	....	.50	.50	.65	.40	....	.70
17 to 17.9 ...	.70	.70	.50	.70	....	.50	.50	.65	.40	....	.70
18 to 18.9 ...	.75	.75	.56	.70	....	.56	.56	.70	.40	....	.75
19 to 19.9 ...	.80	.80	.62	.75	....	.62	.62	.70	.40	....	.80
20 to 20.9 ...	.85	.84	.68	.80	....	.68	.68	.70	.40	....	.85
21 to 21.9 ...	.89	.88	.74	.85	.89	.74	.74	.86	.40	....	.89
22 to 22.9 ...	.93	.91	.80	.90	.92	.80	.80	.87	.40	....	.93
23 to 23.9 ...	.97	.94	.85	.95	.85	.85	.85	.90	.40	....	.97
24 to 24.9 ...	1.01	.97	.90	.98	.98	.88	.88	.94	.40	....	1.01
25 to 25.9 ...	1.05	1.00	.95	1.01	1.01	.91	.91	.98	.60	....	1.05
26 to 26.9 ...	1.09	1.04	1.00	1.04	1.04	.94	.94	1.02	.60	....	1.09
27 to 27.9 ...	1.13	1.08	1.05	1.07	1.07	.98	.97	....	.60	....	1.13
28 to 28.9 ...	1.17	1.12	1.10	1.10	1.10	1.02	....	....	.60	....	1.17
29 to 29.9 ...	1.21	1.16	1.16	1.13	1.15	1.06	....	....	.60	....	1.21
30 to 30.9 ...	1.25	1.20	1.22	1.16	1.20	1.10	....	....	.60	....	1.25
31 to 31.9 ...	1.30	....	1.28	....	1.25	1.14	....	....	.60	....	1.30
32 to 32.9 ...	1.35	....	1.34	....	1.30	1.18	....	....	.60	....	1.35
33 to 33.9 ...	1.41	....	1.40	....	1.35	1.22	....	....	.60	....	....
34 to 34.9 ...	1.47	....	1.46	....	1.40	1.26	....	....	.60	1.16	....
35 to 35.9 ...	1.53	....	....	....	1.45	1.30	....	....	.60	1.22	....
36 to 36.9 ...	1.59	....	....	....	1.50	....	....	....	.60	1.28	....
37 to 37.9 ...	1.65	..	....	....	1.55	....	....	....	.60	1.34	....
38 to 38.9 ...	1.71	....	....	....	1.60	....	....	....	.60	1.40	....
39 to 39.9 ...	1.77	....	....	....	1.65	....	....	....	.60	1.46	....
40 to 40.9 ...	1.83	....	....	....	....	....	....	....	.60	1.52	....
41 to 41.9 ...	1.89	....	....	....	....	....	....	....	.60	1.58	....
42 to 42.9 ...	1.95	....	....	....	....	....	....	....	.60	1.64	....

*October 22. †Sunset Pacific Oil Co., October 26.

Kern River, Newhall-McKittrick, Mount Poso and Round Mountain 11 to 13.9 gravity 45 cents, 14 gravity and above 50 cents, effective October 2, 1929. On December 1, 1928, the Union Oil Co. posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11 to 13.9 gravity at 45 cents, 14 gravity and above 50 cents.
Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity; Domingues and Athens-Rosecrans, 24 to 42.9 gravity.
Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.
Column 3—Kern River, Newhall and McKittrick, 11 to 13.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity posted at 45 cents.
Column 6—Oil below 14 gravity posted at 45 cents.
Columns 8 and 9—Posted by Union Oil Co. only.
Kettleman Hills, 55 gravity and above, $1.65 (posted by Standard Oil Co. of California).



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Dec. 24

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago†	17.0	18.0	3.0	13.0
Decatur, Ill.	19.2	20.2	3.0	13.1
E. St. Louis	15.4	15.4	3.0	12.2
Joliet	19.4	20.4	3.0	13.3
Peoria	19.2	20.2	3.0	13.1
Quincy	19.2	20.2	3.0	12.9
Davenport, Ia.	19.5	20.5	3.0	13.3
Des Moines	19.5	20.5	3.0	13.3
Keokuk	19.5	20.5	3.0	13.3
Sioux City	19.1	20.1	3.0	12.9
Duluth, Minn.	20.5	21.5	3.0	13.9
Mankato	20.1	21.1	3.0	13.7
Minneapolis	20.2	21.2	3.0	13.9
LaCrosse, Wis.	19.2	20.2	2.0	14.0
Milwaukee	18.1	19.1	2.0	12.9
Madison	18.3	19.3	2.0	13.1
Detroit, Mich.	19.8	20.8	3.0	14.7
Grand Rapids	19.7	20.7	3.0	14.6
Saginaw	19.9	20.9	3.0	14.8
Evansville, Ind.	20.0	21.0	4.0	14.0
Fort Wayne	20.4	21.4	4.0	14.4
Indianapolis	20.2	21.2	4.0	14.2
South Bend	20.4	21.4	4.0	14.4
Fargo, N. D.	21.9	22.9	5.0	15.9
Huron, S. D.	21.3	22.3	4.0	14.7
Sioux Falls	20.1	21.1	4.0	14.4
K. C., Mo.*	18.9	19.9	3.0	11.6
Springfield*	18.8	19.8	3.0	12.5
St. Louis*	17.9	18.9	2.5	12.3
St. Joseph	18.5	19.5	2.0	12.2
Wichita, Kans.	17.8	18.8	3.0	11.8
Bartlesville, Ok.	18.5	19.5	4.0	11.5

*State tax 2 cents; remainder city tax.
†Effective February 20, discounts on Q.D.A. in Chicago district 2 cents off service station price on purchases of 500 gallons or more per month and 4 cents on purchases of 1,000 gallons or more per month.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	14.7	12.9
V. M. & P. Naphtha	16.7	13.9
Cleaner's naphtha	17.0	14.9
Stanisol	17.0	15.4

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 349 gallons	8.0
350 gallons or more	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline; 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	17.0	21.0	4.0	12.0
Fort Worth	17.0	20.0	4.0	12.0
Houston	15 0	19 0	4.0	11.0
San Antonio	15.0	19.0	4.0	11.0
El Paso	16.0	20.0	4.0	16.0
Texarkana	17.0	19.0	4.0	12.0
Muskogee*	15 0	17.0	4 0	10.0
Okla. City*	17.0	20.0	4.0	10.0
Tulsa*	15.0	19.0	4.0	10.0
Ft. Smith, Ark.	15.0	17.0	5.0	12.0
Little Rock	17.0	19 0	5 0	13 0

*Gasoline tank wagon price to dealers 2 cents under posted tank wagon.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	18.0	21.0	4.0	15.5
Pueblo	18.0	21.0	4.0	15.5
Grand Junction	22.5	25.5	4.0	19.0
Casper, Wyo.	19.0	22.0	4.0	14.0
Cheyenne	20.5	23.5	4.0	15.5
Butte, Mont.	25.5	28.5	5.0	20.0
Helena	25.5	28.5	5.0	20.0
Salt Lake, Utah	21.0	24.0	3.5	17.0
Albu'que, N. M.	20.0	22.0	5.0	17.0
Boise, Idaho	23.5	26.5	4.0	19.0
Twin Falls	23.5	27.5	4.0	19.0

PENNSYLVANIA—DELAWARE AND PART NEW ENGLAND

The Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	15.0	*21.0	...	13.0
Philadelphia	15.0	*21.0	...	13.0
Scranton	15.0	*21.0	...	13.0
Allentown	15.0	*21.0	...	13.0
Altoona	15.0	*21.0	...	13.0
Erie	15.0	*19.0	...	13.0
Dover, Del.	18.0	20.0	3.0	13.0
Wilmington	18.0	20.0	3.0	13.0
Springf'd, Mass.	18.0	20.0	2.0	15.0
Worcester	18.0	20.0	2.0	15.0
Boston	18.0	20.0	2.0	15.0
Providence, R.I.	18.0	20.0	2.0	13.0
Hartford, Conn.	18.0	20.0	2.0	14.0
New Haven	18.0	20.0	2.0	15.0

*Includes tax of 4.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State. The Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. The Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	18.0	20.0	2.0	15.0
New York*	16.0	18.0	2.0	15.0
Buffalo	18.0	18.0	2.0	14.0
Rochester	18.0	20.0	2.0	14.0
Syracuse	18.0	20.0	2.0	15.0
Boston, Mass.	18.0	20.0	2.0	15.0
Augusta, Me.	20.0	22.0	4.0	15.0
Manch't'r, N. H.	20.0	22.0	4.0	15.0
Burlington, Vt.	19.0	20.0	4.0	15.0

*Prices in steel barrels.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	16.0	30.0	4.0	15.5
Augusta	20.0	22.0	4.0	15.5
Macon	21.0	23.0	4.0	16.5
Savannah	22.0	24.0	4.0	15.5
Birm'ham, Ala.	17.0	19.0	4.0	13.0
Mobile	18.0	20.0	4.0	15.0
Montgomery	19.0	21.0	4.0	16.5
Clarks'le, Miss.	18.0	20.0	5.0	12.5
Jackson	19.0	21.0	5.0	13.0
Natchez	20.5	20.5	5.0	14.0
Gulfport	22.5	24.5	5.0	14.0
Vicksburg	20.5	22.5	5.0	14.0
Jack'ville, Fla.	22.0	24.0	6.0	14.5
Miami	23.0	25.0	6.0	15.5
Pensacola	18.0	20.0	6.0	14.5
Tampa	20.0	22.0	5.0	14.5
Lexington, Ky.	20.0	22.0	5.0	15.5
Covington	20.0	21.0	5.0	15.5
Louisville	21.0	23.0	5.0	13.0
Ashland	20.0	21.0	5.0	15.5
Catlettsburg	20.0	21.0	5.0	15.5

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. Pensacola and Mobile taxes include 1-cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
San Francisco	20.0	24.0	3.0	15.5
Los Angeles	19.5	23.5	3.0	16.5
Reno, Nev.	24.0	26.0	4.0	19.0
Portland, Ore.	20.5	24.5	3.0	16.5
Seattle, Wash.	20.5	23.5	3.0	16.5
Tacoma	20.5	23.5	3.0	16.5
Spokane	24.5	27.5	3.0	20.5
Phoenix, Ariz.	18.0	22.9	4.0	20.5

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	20.25	22.25	4.0	13.25
McCook	21.75	23.75	4.0	14.75
Norfolk	20.75	22.75	4.0	13.75
N. Platte	21.75	23.75	4.0	14.50
Scottsbluff	21.75	23.75	4.0	14.25

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlantic City	16.0	18.0	2.0	13.0
Newark, N. J.	17.0	19.0	2.0	13.0
Annapolis, Md.	19.0	21.0	4.0	13.0
Baltimore	19.0	21.0	4.0	12.0
Cumberland	20.0	22.0	4.0	13.0
Washington	17.0	19.0	2.0	12.0
Danville, Va.	21.0	23.0	5.0	12.0
Norfolk	20.0	22.0	5.0	12.0
Petersburg	21.0	23.0	5.0	13.0
Roanoke	21.0	23.0	5.0	13.0
Richmond	20.0	22.0	5.0	13.0
Charles'n, W.Va.	19.0	21.0	4.0	13.0
Keyser	20.0	22.0	4.0	13.0
Parkersburg	19.0	21.0	4.0	12.0
Wheeling	20.0	22.0	4.0	13.0
Charlotte, N. C.	17.0	19.0	5.0	13.0
Hickory	21.0	23.0	5.0	13.0
Mt. Airy	21.0	23.0	5.0	13.0
Salisbury	19.0	21.0	5.0	13.0
Charleston, S.C.	21.0	23.0	6.0	13.0
Columbia	22.0	24.0	6.0	13.0

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points*	18.0	19.0	4.0	†12.0

*Dealers and commercial accounts 2 cents under tank wagon.
†Service station price 14 cents.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.*	15.0	15.0	5.0	13.0
Baton Rouge	16.0	18.0	4.0	14.5
Alexandria	19.0	21.0	5.0	16.0
Lafayette†	20.0	22.0	5.0	14.0
Lake Charles†	20.5	22.5	5.0	16.0
Shreveport	17.5	19.5	4.0	15.0
Knoxv'le, Tenn.	20.0	22.0	5.0	16.0
Memphis	18.0	20.0	5.0	12.5
Chattanooga	20.0	22.0	5.0	14.0
Nashville	19.0	19.0	5.0	16.0
Bristol	21.0	22.0	5.0	14.0
Lt. Rock, Ark.	19.0	21.0	5.0	13.0

*Tax of 5 cents includes city tax of 1 cent. Louisiana Kerosene prices include 1-cent state tax and 1-cent parish tax.
†Includes 1-cent parish tax.

TANK WAGON CHANGES

December 10—Standard Oil Co. of New Jersey reduced gasoline tank wagon and service station prices 2 cents at Charlotte, N. C.

December 13—Continental Oil Co. advanced gasoline service station price 3 cents at Salt Lake City, Utah.

December 16—Standard Oil Co. of Louisiana reduced gasoline tank wagon and service station price 2 cents at Shreveport, La.

December 18—Continental Oil Co. reduced gasoline tank wagon and service station price 1 cent in Wyoming and Colorado. No changes were made at Denver, Pueblo and Grand Junction, Colo. Reduction at Cheyenne, Wyo., was one-half cent.

December 19—Magnolia Petroleum Co. advanced gasoline tank wagon and service station prices 2 cents at Houston, Tex. Same company reduced gasoline tank wagon price 1 cent and service station price 2 cents at Muskogee, Okla.

December 21—Magnolia Petroleum Co. reduced gasoline tank wagon and service station prices 1 cent at Little Rock, Ark.

RETIRING VETERANS HONORED AT BANQUET

HOUSTON, Tex., Dec. 23.—Under a new plan of retirement which will be put into effect by The Texas Company January 1, 1930, six field men in the Gulf Coast who have attained the age of 65 are being retired. In appreciation of the services given by these men, a banquet in their honor was given by the producing department at the company's Camp Beaty, near Houston, on the evening of December 19. At the banquet were more than 40 persons, including executives of the Houston office and field superintendents of the Southwest Texas division.

The six men being retired are W. E. Brown, Humble, 68 years old, in service since 1914; J. F. Christie, Humble, 65 years old, in service since 1919; T. A. Kenyon, Humble, 65 years old, in service since 1917; Frank Layne, Humble, 69 years old, in service since 1906; D. S. Glisson, Sour Lake, 67 years old, in service since 1917; and H. A. LaVrier, Sour Lake, 67 years old, in service since 1919.

The new plan of retirement is effective for all branches of The Texas Company everywhere. Under the plan, any man on discretion of the company may be retired upon reaching the age of 65 years, and receive the benefits of the company, as follows: Four months' full pay to those who have been in the service one year with one month's full pay for each six months additional service up to five years. Above five years, the amount payable will be increased 5 per cent for each additional year up to 25 years.

CRUDE OIL PRICES

(Continued from Page 207)

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

Luling (May 2)*	$ .90
Mirando (May 20, 1929)†	.90
Salt Flat (May 20, 1929)§	1.25
Rockdale Minerva (April 15)	
Below 28 gravity	1.25
38-38.9 gravity	1.27
39-39.9 gravity	1.29
40 and a ove	1.31
Thrall‡	...
Callihan (May 15)	1.75
Lytton Springs (Lockhart)	See gravity table
Somerset	See gravity table

*Posted by Magnolia Petroleum Co.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.
‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight.
§Humble Oil & Refining Co.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective October 1, 1929)

Penna Grade Oil in New York Transit Lines (New York)	$3.05
Bradford District Oil in National Transit Lines (Pennsylvania)	3.05
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.05
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	3.00
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	2.90
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.70
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 22, 1929)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Line (May 22, 1929)	1.70
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s lines (May 22, 1929)	1.80
Somerset Oil in Cumberland Pipe Line Lines (Kentucky) (Nov. 12, 1929)	1.55
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (Jan. 29)	.60
Wayne district oil in Cumberland Pipe Lines	1.42

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective May 21, 1929)

Lima	$1.80
Wooster	1.90
Illinois	1.75
Indiana	1.57
Princeton	1.75
Plymouth	1.28
Waterloo (November 17, 1926)	1.35
Western Kentucky	1.68
Dundee, Mich. (Sept. 17, 1929)‖	
Same as Mid-Continent gravity scale	
Upper and Lower Traverse sands, Mich‖	
Same as Mid-Continent gravity scale	
Midland, Mich. (December 6, 1929)*	$1.50
Saginaw, Mich., Saginaw Sand (February 10)†	1.39
Saginaw, Mich., Berea Sand (February 10)†	1.79
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 15)‡	1.50
Oil in line in Stoll Oil Refining Co. in Oil City, Ky. (Oct. 7, 1929)§	1.70
Oil Springs (Canada)¶	2.27
Petrolia (Canada)¶	2.30

*Posted by Pure Oil Co.
†Posted by Sun Oil Co.
‡Posted by Paragon Development Co.
§Posted by Stoll Oil Refining Co.
¶Posted by Imperial Oil Co., Ltd.
‖Posted by Standard of Indiana for boat shipment.

MEXICAN CRUDE

Panuco*	$ .64

*Based on November transactions for deliveries during November and December. Price exclusive of taxes.

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No Hitch Expected on Anglo-American

Deposits of Stock Reported in Large Volume. Believed to Be Strengthened as Unit of World Oil Company

Standard Oil Co. of New Jersey's offer for Anglo-American Oil Co., Ltd., through a subsidiary, Standard Oil Export Co., is bringing in deposits of Anglo-American stock in large volume, and no hitch in the transaction is anticipated. The exchange offer has disclosed the fact that control of Anglo-American has rested with American shareholders. The exchange offer requires the acceptance by holders of two-thirds of Anglo-American's stock, but if 50 per cent of Anglo stock is deposited by January 31, an extension to February 28, 1930, is provided for. The exchange is on the basis of one share of Standard Oil Export Co., preferred, callable at 110, for 5 5-9 shares of Anglo-American.

While close to 100 per cent approval on the part of American shareholders is indicated by deposits already made, it is possible that opposition may develop among a small group of British holders. The "Investors' Chronicle" of London, in its current issue, foreshadows this, saying: "The well secured dividend to be received by the exchange will be equal to 18¾ per cent on each present Anglo-American share. The dividend on Anglo-American for the last 10 years works out at an average of exactly 18¾ per cent per annum, paid tax free. So far as current income is concerned, therefore, the offer seems equitable, but Anglo-Americans have been bought by many people for their speculative possibilities. The average dividend, taking the last three years alone, has been only slightly over 13¼ per cent per annum tax free, and the average earnings of Anglo-Americans for the same period have been a trifle more than 20¼ per cent. But when oil conditions were more favorable earnings were very much higher, and shareholders will no doubt consider whether the speculative possibilities of a recovery have been fully allowed for in the exchange terms. Critics have recalled the allegation that two or three years ago the Vacuum Oil Co. offered nearly £5 a share for Anglo-Americans and that this was refused by the board without consulting shareholders. Attention has also been drawn to the issue of nonvoting shares some time ago, and it does seem as if this procedure was calculated to push the present deal through. On the whole, however, the offer seems worth accepting by permanent holders. A sign that the Anglo-American position is improving is provided by the fact that a 7½ per cent tax free interim dividend is now announced, against nothing a year ago."

Anglo-American for many years has drawn the bulk of its supplies from the United States. During the protracted gasoline price war waged between the Soviet and British marketing companies, Anglo-American, while buying American oil at prices based on a world parity, was selling in the United Kingdom at 4 to 6 cents per gallon under this world parity, taking into consideration ocean freights. This condition naturally reacted against the company's earnings, but the situation was relieved only this year when the Soviet and Anglo arrived at a trading and purchasing arrangement, and prices in Great Britain went back to world levels.

The experiences undergone during this lengthy price war, however, are understood to have aroused in Anglo-American directors a feeling that the company's position would be very much stronger if it were a unit in a world oil company, and thus in better position to weather such competitive storms. This feeling was illustrated by F. E. Powell, chairman of the board of Anglo-American, who, in his letter announcing to shareholders the Standard offer, said: "Your company's activities are entirely confined to the marketing side of the business and your directors have in mind that under existing conditions a purely marketing company is at a considerable disadvantage. Your directors, therefore, consider that it would be to the stockholders' interest to exchange their Anglo shares for guaranteed shares in a company closely associated with powerful producers and refiners and have no hesitation in strongly recommending them to accept this offer."

Superior Oil

Superior Oil Corp. reports for 11 months ended November 30, 1929, profit of $2,762,936 after expenses and interest, but before depletion, depreciation, expired leases and Federal taxes, comparing with $605,432 in the first 11 months of 1928.

Vacuum Oil

Vacuum Oil Co. dividends for this year totaled $4.25 a share, including a special year-end disbursement of 25 cents. Last year the company paid dividends equivalent to $3.75 a share on the increased stock resulting from the 100

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of New York Stock Exchange, Kennedy Building, Tulsa, Okla.

1929 High	1929 Low	Week ended December 18 Sales	Week ended December 18 High	Week ended December 18 Low	Week ended December 18 Close	Stocks	Outstanding capital	Par value	Div. rate	Last paid	1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low
42⅝	17½	9.000	20	19	19½	Amerada Corp.	(sh) 922,075	N.P.	50cQ	7-31-29	32⅛	24¼	37⅝	27⅝	43⅞	27⅛
64¾	12½	4,200	27¾	26	27⅝	American Republics Corp.	(sh) 209,180	N.P.	.....	3-20-29	74	39⅞	82⅛	35⅛	85	51⅛
47¼	40½	No sales.				Associated Oil	$57,200,300	$25	50cQ	9-30-29	60	44¾	50¼	35	53⅜	37½
77⅞	30	3.800	40¼	39⅝	40⅛	Atlantic Refining	$50,000,000	$25	25cQ*	9-16-29	128⅜	97	131⅜	104	66⅜	50
49⅛	20	6,300	25⅛	24⅞	24⅞	Barnsdall Corp.	$45,235,650	$25	50cQ	8- 6-29	33½	23½	35½	20¾	53	20
47¼	18	3,500	26⅜	25	25½	Continental Oil of Delaware	(sh) 4,741,554	N.P.	.....	3-31-27	..	..	..	..	..	..
94¾	42¼	1,100	52	51½	52	General Asphalt	$20,785,400	$100	.....	.....	94½	50	96¾	65	94⅞	68
109	23	2,500	59⅜	57⅛	58½	Houston Oil	$25,000,000	$100	.....	.....	72	50¼	175¾	60⅛	167	79
39⅜	17¾	600	23½	23⅛	23¼	Independent Oil & Gas	(sh) 1,333,572	N.P.	50cQ	7-31-29	34	19⅝	32¾	17⅝	38⅜	21¾
53	13⅛	2,300	20⅛	19⅝	20⅛	Indian Refining	$12,307,370	$10	.....	5-31-24	12¾	7½	12⅛	7⅝	39⅝	9
38⅜	16½	No sales.				Lago Oil & Transport	(sh) 3,992,122	N.P.	.....	5- 1-27	25⅞	16½	37¾	20½	39⅛	27¾
18	7	900	8⅞	8⅝	8⅝	Louisiana Oil Refining	(sh) 1,190,063	N.P.	.....	.....	19⅞	12	18⅛	10	19¾	9⅜
18½	7	200	7	7	7	Maracaibo Oil	(sh) 330,000	N.P.	.....	.....	28	16½	22¾	12	25½	12½
69⅜	9¼	2,800	20⅜	19¾	19¾	Mexican Seaboard	(sh) 1,276,873	N.P.	.....	12-15-20	13¾	6	9¼	3	73	4⅝
39⅞	22¼	3,500	27½	27	27	Mid-Continent Petroleum	(sh) 1,857,912	N.P.	50cQ	8-15-29	37	20½	39⅜	25½	44½	25⅛
5⅛	1½	No sales.				Middle States Oil	$24,298,850	$10	.....	7- 1-23	2½	½	3¾	1⅝	7⅜	2⅜
69	40¼	No sales.				Pan American P. & T.	$50,084,700	$50	.....	10-20-27	76½	56⅛	65⅞	40⅛	54⅞	38¼
69¼	40½	200	60	60	60	Pan American P. & T. "B"	$121,105,050	$50	.....	11-15-24	78⅝	56⅞	66⅜	40¼	58⅞	37⅜
18½	13⅝	No sales.				Pan American Western "B"	(sh) 400,000	N.P.	.....	1-30-27	46	30	37⅞	16¾	28⅜	15½
15¼	3	No sales.				Panhandle P. & R.	(sh) 199,370	N.P.	.....	.....	32	4½	18⅞	8	21⅜	11½
76	47½	No sales.				Panhandle P. & R. pfd.	$2,564,400	$100	37½cQ	7- 2-23	99⅜	51	83	54	108	70
47	24¼	2,100	36	34¾	35½	Phillips Petroleum	(sh) 2,406,796	N.P.	37½cQ	10- 2-29	57⅜	40	60¼	36¼	53⅞	35¼
3⅜	1	700	1⅛	1⅛	1⅛	Pierce Oil Corp.	$29,622,831	$25	.....	.....	..	..	1⅛	½	5¼	½
5⅞	½	3,600	2¾	2⅝	2⅝	Pierce Petroleum	(sh) 2,500,000	N.P.	.....	.....	7	2¼	5½	2½	7	3½
65⅝	40½	2,900	55	54⅝	54⅝	Prairie Oil & Gas	$61,720,125	$25	50cQ*	9-30-29	60¼	48	55½	45⅝	68	46
65	45	No sales.				Prairie Pipe Line	$101,250,000	$25	75cQ†	9-30-29	137½	122½	190	130¾	280	172
25⅞	4	No sales.				Producers & Refiners	$37,438,950	$50	.....	9-15-23	20¾	11	33⅞	16¾	29⅞	16
46¾	30	No sales.				Producers & Refiners pfd.	$2,845,350	$50	37½Q	5- 1-25	41¾	30¾	50	36⅞	49⅝	41
30¾	20	2,100	24	23¾	24	Pure Oil	$75,959,250	$25	37½Q	9- 2-29	31	25¼	33½	25	31⅝	19
49⅝	20	600	28	27⅝	27⅝	Richfield Oil	$47,964,650	$25	50cQ	8-15-29	27½	22	28⅝	25⅜	56	23
42½	15	1,400	20	19¾	20	Rio Grande Oil	(sh) 1,200,000	N.P.	$2.00A	7-25-29	..	..	..	..	37½	32
64	43½	2,900	52⅝	52¼	52¼	Royal Dutch, N. Y.	(sh) 611,303	$13.40	.....	8-13-29	57⅜	47⅜	54½	44¼	64	44⅝
55¾	43⅝	180	45	45	45	Shell Transport & Trad.	£19,654,274	£1	$1.45	7-23-29	48⅝	40½	47⅞	41⅜	57½	40⅝
31⅜	19	2,000	23¼	23	23	Shell Union Oil	(sh) 13,000,000	N.P.	35cQ	9-30-29	31	24	31⅜	24⅝	39¼	23¼
40⅛	15	900	26	24¾	24¾	Simms Petroleum	$8,060,380	$10	40cQ	9-14-29	25⅝	15⅛	25⅜	14¼	27¼	18⅛
45	21	9,500	26	25½	25⅝	Sinclair Consolidated	(sh) 5,500,000	N.P.	50cQ*	10-15-29	24⅞	15¾	22⅜	15	46¾	17⅜
111	103	No sales.				Sinclair Consolidated pfd.	$16,025,250	$100	$2Q	8-15-29	99½	90	104¼	97	110	102½
46½	28	No sales.				Skelly Oil	$27,237,750	$25	50cQ	9-16-29	37⅛	26⅝	37⅜	24⅛	42⅝	25
81⅞	51½	1,800	62⅜	61½	61⅞	Standard Oil of Cal.	(sh) 12,594,098	N.P.	62½cQ	9-16-29	63⅝	51½	60¾	50⅜	80	53
83	48	38,200	65⅞	63¾	64⅝	Standard Oil of N. J.	$620,079,800	$25	25cQ*	9-16-29	46⅜	37½	41⅜	35⅛	59⅜	37¾
48⅛	31¾	18,200	34⅜	33⅜	33⅜	Standard Oil of N. Y.	$434,094,575	$25	40cQ	9-16-29	47¼	30⅜	34⅛	29¾	44¼	28¾
86⅜	55½	No sales.				Sun Oil	(sh) 1,297,627	N.P.	25cQ	9-16-29	41¾	30⅛	34⅞	30	77	31½
24	5¼	1,100	7⅞	7½	7¾	Superior Oil Corp.	(sh) 2,324,938	N.P.	.....	12-20-20	..	..	..	..	..	..
71¾	50	4,000	57	56½	56½	The Texas Corporation	$211,076,650	$25	75cQ	10- 1-29	58	48	58	45	74¾	50
23⅞	9½	2,400	11⅞	11⅛	11⅝	Texas Pacific Coal & Oil Co.	$8,380,340	$10	5A‡	1- 3-28	19½	12	18⅞	12	26⅝	12⅛
40	14	No sales.				Tide Water Oil	(sh) 2,191,759	N.P.	20cQ	9-30-29	39¼	27	29⅛	19	41½	19⅝
97½	85⅛	No sales.				Tide Water Oil 5½% pfd.	$20,705,200	$100	$1.25Q	8-15-29	103	87¼	90⅛	85	100⅛	86
23½	10	2,900	12⅞	12⅜	12⅝	Tide Water Associated	(sh) 4,796,158	N.P.	.....	8- 1-27	27	20⅞	19⅛	15¾	25	14¾
90⅞	74½	200	81¼	81¼	81¼	Tide Water Associated pfd.	$72,844,300	...	$1.50Q	10- 1-29	..	..	..	..	..	..
15¼	5⅛	5,600	9⅛	8¾	9	Transcontinental Oil	(sh) 3,742,029	N.P.	.....	.....	5½	3	10⅜	3¾	14¾	7¼
57	42¼	200	46½	45⅞	45⅞	Union Oil of California	$94,798,100	$25	50cQ	8-10-29	58⅜	37¼	56½	39⅝	58	42⅜
163¾	121⅞	No sales.				Union Tank Car	$31,061,200	$100	$1.25Q	9- 3-29	120⅜	84¼	127½	94	128⅛	110
42⅞	15	1,100	22⅛	21⅝	22⅛	Warner-Quinlan	(sh) 356,000	N.P.	50cQ	10- 1-29	30¼	23½	34½	24½	44⅞	26
38	25	500	28	27¾	27¾	White Eagle Oil & Refining	(sh) 490,000	N.P.	50cQ	10-21-29	29¾	25⅛	27½	20	38	20⅛
29¾	12⅞	200	15⅛	15⅛	15⅛	Wilcox Oil & Gas	(sh) 2,400,000	N.P.	.....	5-10-28	..	..	..	..	..	.

*Plus extra dividend of 25 cents †Plus extra dividend of 50 cents. ‡Payable in stock. x Ex-dividend.

per cent stock dividend paid to stock of record April 14, 1928.

Washington Oil

Directors of the Washington Oil Co. have declared a quarterly dividend of $1 a share, payable December 20, to shareholders of record December 16. By this declaration directors have increased the annual dividend rate of the shares to $4 against the $3 a year previously paid.

New Bradford Oil

The New Bradford Oil Co. has declared the regular quarterly dividend of 12½ cents a share on the $5 par stock, payable January 15 to holders of record December 31.

Indiana-Pan American

A letter accompanying dividend checks to nearly 80,000 stockholders for the regular quarterly dividend of 62½ cents and extra of 25 cents, E. G. Seubert, president of Standard Oil Co. of Indiana, states the company has carried out the plan approved by stockholders August 27 to exchange shares of Standard Oil Co. of Indiana for shares of Pan American Petroleum & Transport Co. at the 7-to-6 ratio, and has now acquired ownership of a large percentage of the stock of that company.

He extends to former Pan American stockholders assurance that "best efforts will be put forth to maintain and better the Indiana company's long record of continuous and substantial earnings and dividend payments."

The dividend payment of the Indiana company amounts to approximately $14,400,000. This amount indicates a total of about 16,457,000 shares outstanding.

Darby Petroleum

Darby Petroleum Corp. declared regular quarterly dividend of 25 cents on common, payable January 15 to stock of record December 31.

North Central Texas

North Central Texas Oil Co., Inc., reports for quarter ended September 30, 1929, net income of $75,179, after depletion, leases, writeoffs and Federal taxes, comparing with $95,713 in preceding quarter and $61,113 in September quarter of 1928.

Net profit for nine months ended September 30 totaled $246,907, after above charges, against $115,747 in first nine months of previous year. Capital stock consists of $1,000,000 6½ per cent preferred and 270,000 no-par shares of common.

Magdalena Syndicate

Magdalena Syndicate, inactive in the exploitation of its Colombian properties for the past two years, during which drilling was discontinued on its two wells, "Nato" and "Malpaso," owing to the impossibility of proceeding further with standard drilling equipment, is planning to refinance and extend its development work, according to announcement by W. S. Thomas, newly elected vice president.

Following favorable reports from geologists on the deep sand possibilities of its properties, the company has decided

(Continued on Page 215)

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Members of New York Curb Market, Kennedy Building, Tulsa, Okla.

1929 High	1929 Low	Week ended December 18 Sales	Week ended December 18 High	Week ended December 18 Low	Week ended December 18 Close	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low
72	⅛	100	⅛	⅛	⅛	Amer. Con. Oilfields	$11.018.000	$5	.....	.....	$6.75	.45	2⅛	.55	1½	.53
8⅝	1⅛	300	1⅝	1⅝	1⅝	Amer. Maracaibo	700.000	N.P.	.....	.....	..	..	7½	2¾	9½	3⅛
5	1⅛	100	1⅝	1⅝	1⅝	Argo Oil (sh)	683.971	$10	.....	.....	..	..	2¾	1	4½	2¼
62	7⅞	No sales.				British-American (sh)	1.311.321	N.P.	25cQ	10- 1-29	85¼	60	40	20½	55	32⅝
4⅞	1	600	1	1	1	Carib. Syndicate	$131.250	25c	.....	.....	28⅝	9¼	28¼	15½	4½	3⅞
68⅛	20	55,400	27	25⅛	25¾	Cities Service (sh)	24.290.359	N.P.	30cQ*	11- 1-29	..	..	58¾	40¼	90⅞	54
98⅜	84	400	89¼	89⅛	89⅛	Cities Service pfd. (sh)	1.500.000	N.P.	50cM	11- 1-29	..	..	95⅜	87	103½	94½
2	¼	1,600	⅜	⅜	⅜	Colombia Syndicate	$2.000.000	$1	.....	.....	3½	1⅜	3⅞	1⅛	3¼	.76
11⅛	2½	1,600	4⅝	4⅝	4⅝	Cons. Royalty	$5.000.000	$10	15cQ	.....	..	..	9¾	6⅜	8⅞	6¼
11¾	5⅝	600	6¾	6⅝	6¾	Creole Petroleum (sh)	5,977.873	N.P.	.....	.....	16	10	14⅞	9⅛	17½	9½
2½	⅜	400	½	⅜	½	Crown Central (sh)	578.000	N.P.	.....	.....	..	..	3	.50	3¼	.76
26	6½	800	9⅛	9	9	Darby Petroleum (sh)	1,019.392	N.P.	25cQ	10-15-29	7⅞	6¾	12	4	33½	3¼
11	2	500	5¼	5¼	5¼	Derby Oil & Refining (sh)	500.000	N.P.	.....	.....	..	..	2½	74	2¼	1
44	20⅞	No sales.				Derby Oil & Refining pfd. (sh)	48.500	N.P.	.....	.....	..	..	16¾	4	21⅜	7½
209	115	700	142	140	140	Gulf Oil Corp. (sh)	4.504.921	$25	37½cQ	10- 1-29	98	92	118	86¼	165	101⅛
2⅞	⅜	400	¾	¾	¾	Intercontinental Pet.	$5,682.000	$5	.....	.....	$3.00	.83	2½	.80	3⅜	1
3⅝	1¼	No sales.				Kirby Petroleum (sh)	750.000	N.P.	.....	.....	..	..	2¼	1⅛	3	1¼
6⅛	2	400	2	2	2	Leonard Oil & Dev.	$50,000.000	$25	.....	.....	12¼	5¾	10⅞	5⅛	9⅜	5⅛
38⅞	18	No sales.				Lion Oil & Refining (sh)	250.000	N.P.	50cQ	10-27-29	27	20	27½	20	43⅞	20
67⅞	28	200	35½	35½	35½	Lone Star Gas (sh)	5,000.000	N.P.	20cQ	9-30-29	46	30	59⅜	37	62¼	48½
1¼	¼	500	5/16	5/16	5/16	Magdalena Syndicate (sh)	850.000	$1	.....	.....	2⅞	1	2⅞	.80	1⅞	.50
38½	17¾	No sales.				Margay Oil (sh)	160,000	N.P.	50cQ	10-10-29	34	12½	52	12	48½	32
6⅜	2½	No sales.				Mexico-Ohio Oil	.....	...	.....	.....	8	5½	12⅛	5	8	2¾
1½	¼	No sales.				Mountain & Gulf	$4.000.000	$1	2cQ	10-15-29	1¾	1⅛	1½	1	1¾	.76
22⅞	7	100	8¾	8⅝	8¾	Mountain Producers	$1,682,182	$10	40cQ	10- 1-29	26	23	29¼	22¾	28⅞	19½
5	2¼	No sales.				New Bradford Oil	$1,095.291	$5	12½cQ	10-15-20	6⅝	5	5⅞	4⅝	5⅝	4¼
9⅜	2¼	500	3½	3¼	3½	New Mex. & Arizona	$1,000.000	$1	.....	.....	..	..	16	9¼	11⅞	7⅛
18½	6⅛	No sales.				North Central Texas (sh)	400,000	N.P.	15cQ	9- 3-29	..	..	12¾	9½	14¼	8½
3½	½	1,700	¾	⅝	⅝	Pandem (sh)	489.875	N.P.	.....	.....	10⅛	5⅞	9⅜	3¼	6	2⅛
10¼	2⅝	500	3⅛	3	3⅛	Pantapec Oil (sh)	1,506.600	N.P.	.....	.....	12¼	11¾	12⅛	7	15⅝	8½
7¾	4⅜	No sales.				Pennok Oil (sh)	150,000	N.P.	.....	.....	22¾	12	13½	5⅛	7¾	4⅞
16	9½	No sales.				Red Bank Oil (sh)	250.000	N.P.	.....	.....	17	8½	24⅜	7	18	4⅞
8½	1⅛	500	3⅛	3⅛	3⅛	Reiter-Foster (sh)	388.584	N.P.	10cQ	9- 1-29	30¼	12	15½	3½	12⅞	4⅛
11	3	No sales.				Ryan Consolidated (sh)	500.000	N.P.	.....	.....	7	4½	7	4½	12	4⅛
5⅞	1⅞	No sales.				Salt Creek Consolidated (sh)	1,286.300	$10	10cQ	10- 1-29	10	7½	8	5⅛	7¼	5½
25⅞	9	600	11	10¾	10⅞	Salt Creek Producers (sh)	1,496.859	$10	50cQ	11- 1-29	35	24½	35½	27¼	35	23⅛
2½	½	1,000	1¼	1¼	1¼	Savoy Oil	$750.000	$5	.....	.....	6⅞	1¾	7	1¼	3½	1
145	82	No sales.				Transcontinental pfd. (sh)	157.500	$100	.....	.....	92	63½	92	63½	93¼	75
6½	1¾	3,300	2½	2½	2½	Venezuelan Petroleum (sh)	755.090	$5	5cQ	8-15-29	8	4½	7⅜	4¼	9⅛	4¾
9⅛	2	400	3⅛	2¾	2¾	Woodley Petroleum	$500.000	$1	.....	.....	8⅛	5½	7	4¾	8¼	4⅞
2⅞	½	No sales.				"Y" Oil & Gas (new) (sh)	100.000	N.P.	.....	.....	6½	6	6	1¾	8⅜	2⅛

*Including extra in stock.

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Members of New York Curb Market, Kennedy Building, Tulsa, Okla.

1929 High	1929 Low	Week ended December 18 Sales	Week ended December 18 High	Week ended December 18 Low	Week ended December 18 Close	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low
18	14	2,900	16¾	16⅝	16¾	Anglo-American Oil	£4.192.635	£1	.....	6- 5-29	21	16	21⅝	17⅞	22⅜	14⅞
46½	25	No sales.				Borne Scrymser	$1.000.000	$25	$18.A.	10-15-29	76	65	69	50	56½	44½
74¼	55	No sales.				Buckeye Pipe Line	$10.000.000	$50	$1Q	9-14-29	59½	42	60	45	76	53
210	130	No sales.				Chesebrough Mfg.	$3.000.000	$25	$1Q*	9-30-29	82½	65	126	76½	161	117
29	8⅞	No sales.				Continental Oil	$36,057.840	$10	.....	12-15-27	25⅞	17½	22⅝	16¼	23	16
75¾	40	No sales.				Cumberland Pipe Line	$1.500.000	$50	$1Q	9-15-29	137	102	137	89	114	67
70½	42	No sales.				Eureka Pipe Line	$5.000.000	$100	$1Q	11- 1-29	63¾	43	68½	47	88	64½
6⅝	5	No sales.				Galena Signal Oil	$16.000.000	$100	.....	.....	32½	9⅞	13½	3½	13	4¼
128	74⅛	9,600	86¼	85⅛	86¼	Humble Oil & Refining	$74,103.300	$25	30cQ†	10- 1-29	68½	52	68½	54	114⅜	59¼
340½	260	300	310	309	309	Illinois Pipe Line	$20.000.000	$100	$10S.A.	6-15-29	144½	125½	182	123¾	290½	176½
41	22	700	27	27	27	Imperial Oil Co., Ltd. (sh)	26.421.768	N.P.	12½cQ	9- 3-29	..	..	64¾	37¾	104	56¾
41⅞	26	600	41½	40	40	Indiana Pipe Line	$3.000.000	$10	50cQ‡	11-15-29	72½	58	94½	61	91⅞	74⅜
30⅜	15	No sales.				International Pet. (sh)	14.247.088	N.P.	12½cQ	6-25-29	35½	28¾	29	28¼	55	35
25⅛	10⅛	200	22⅛	22	22	National Transit	$6.362.500	$12.50	25cQ	9-26-29	20¾	12½	24	13½	32⅜	19⅜
16	10	No sales.				New York Transit	$1.000.000	$10	40cQ	10-15-29	51½	27¾	44½	31¼	75	38½
63	41	No sales.				Northern Pipe Line	$2.000.000	$50	$2S.A.	7- 1-29	80½	64	100	70	69	56½
79⅞	64½	No sales.				Ohio Oil	$60.000.000	$25	50cQ‡	9-16-29	67¾	55¾	67⅞	52	84	58½
44½	20	No sales.				Penn Mex. Fuel	$10.000.000	$25	50cQ	12-15-28	24¾	15	39	12	84	28
50	33	No sales.				Solar Refining	$4.000.000	$25	$1.25S.A.	6-20-29	..	..	..	..	..	..
22½	13	No sales.				Southern Pipe Line	$1.000.000	$10	50cQ	.....	74½	61½	27¼	15½	19	15
60¼	35⅛	400	41	40⅛	40⅛	South Penn Oil (new)	$30.000.000	$25	50cQ	9-30-29	50	34½	41½	35	71⅞	36¾
70	60	No sales.				Southwest Pa. Pipe Lines	$1,750.000	$50	$1Q	10- 1-29	56	47½	83	55½	102	70
63	45	1,900	54⅞	54½	54⅝	Standard Oil of Indiana	$348.175.069	$25	62½cQ	9-16-29	70½	60½	81½	64⅝	95⅞	70⅞
33¾	18	1,400	27	26⅜	26⅜	Standard Oil of Kansas	$8.000.000	$25	.....	6-16-24	36½	16½	20⅞	14⅝	37¾	15
46⅞	29	900	35⅜	34⅝	35⅜	Standard Oil of Kentucky	$25.654.516	$10	40cQ	9-30-29	134⅜	108	130	111½	179¾	122¼
50¼	40	No sales.				Standard Oil of Nebraska	$4,649.225	$25	62½cQ‡	9-30-29	51⅜	42	49½	40	54⅞	39⅞
129	60	No sales.				Standard Oil of Ohio	$14.000.000	$25	62½cQ	10- 1-29	372	288	87½	72	134	71
18	10	No sales.				Swan-Finch Co.	$861,466	$25	.....	1-15-29	21	15	21	14½	23½	16
133¾	75	300	99¾	97½	97½	Vacuum Oil Co.	$126,180,350	$25	$1Q	9-30-29	109⅜	90¼	..	..	111	72

*Plus 50 cents extra. †Plus 20 cents extra. ‡Plus 25 cents extra. x Ex-dividend.

HEATING OILS ALONE STRONG IN THE EAST

(Continued from Page 201)

buyers are looking for reductions in other cylinder oils, and deferring additional purchases until the market goes more their way.

Limited inquiry for gas and fuel oils for export shipment has been reported in East Coast markets, and the markets are in quiet position.

Petroleum Exports

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Dec. 14	Dec. 7	Nov. 30
Gasoline	500,000	310,000	264,000
Naphtha	485,000	278,800	160,000
Kerosene	149,000	674,000	29,200
Fuel oil	5,000	.....	186,000
Lub. oil	1,281,000	2,473,600	2,560,000
Petroleum, refined	740,000	2,806,400	105,000
	Pounds		
Petrolatum	10,000	132,000	8,200
Paraffin wax	2,225,000	831,300	2,185,000
Refined	225,000	400,000	13,000
Scale	1,423,000	507,200	380,000
Lub. grease	988,000	390,000	897,200

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended December 14 totaled 1,718,000 bbls., a daily average of 245,428 bbls., compared with 1,943,000 bbls., a daily average of 277,571 bbls. for the previous week and a daily average of 250,714 bbls. for the four weeks ended December 14. Details follow:

(Barrels of 42 gallons)

At Atlantic Coast ports—	
Baltimore	334,000
Boston	72,000
New York	664,000
Philadelphia	96,000
Others	322,000
Total	1,488,000
Daily average	212,571
At Gulf Coast ports—	
Galveston	65,000
New Orleans and Baton Rouge	100,000
Port Arthur and Sabine district	65,000
Total	230,000
Daily average	32,857
At all United States ports—	
Total	1,718,000
Daily average	245,428
Daily average four weeks	250,714

California Oil Receipts

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended December 14, totaled 424,000 bbls., a daily average of 60,571 bbls., compared with 885,000 bbls., a daily average of 126,429 bbls. for the week ended December 7 and a daily average of 84,769 bbls. for the four weeks ended December 14. Details follow:

(Barrels of 42 gallons)

At Atlantic Coast ports—	
Baltimore	78,000
New York	157,000
Philadelphia	117,000
Others	72,000
Total	424,000
Daily average	60,571
Daily average four weeks	84,679

There were no receipts at Gulf Coast ports during the week.

Distribution of total California oil receipts follow:

Gasoline	349,000
Gas oil	75,000

WEATHER DEPRESSES THE CHICAGO MARKET

(Continued from Page 200)

The lighter fuel oils, which are so largely used for oil burners, are scarce and higher in price. A good 28-30 is no longer to be bought at $1.20 and some are holding for $1.27½ to $1.30 for this oil, and, although they admit that buyers call it too high, the grade is selling at these prices. Many are blending this oil and some use a gas oil that would not pass for burner oil owing to the odor in the blend.

Much Wanted and Stocks Light

The actual movement of the heavy industrial fuels is not so much increased by the cold weather but the oil is wanted badly and stocks are light at present. The larger nearby refiners are out of the market and this makes a large hole in the local supply. The price now often quoted here for a zero 18-22 fuel oil high in sulphur is 85 cents, and this is not the top price, for in many cases the question is to get the oil rather than the price to be paid.

These conditions may prove to be more or less temporary as the weather is already milder and, if this prevails, there will be a better delivery and some increase in the supply of oil. The industrial demand is not as active as it has been for manufacturing purposes and many of the industrial leaders look for the first quarter of 1930 to be less active than the corresponding quarter of 1929. Many plants are now closed down for the annual inventories.

Building operations are at a low ebb and architects' offices report that they have practically no new plans under way. In several instances during the last week, large users of fuel oil have asked that shipments to their plants be held up wholly or in part pending further instructions and in some such instances inquiries have developed the fact that the orders for next quarter's output have been less than expected and the plant would wait for more orders before beginning the 1930 operations. Generally there is the usual slowing down of operations that is common at this time of the year, and some uncertainty as to the amount of business to be had for the first quarter of 1930.

Little Attention to Tank Wagon Scale

Little thought is being given by jobbers to the tank wagon scale in this territory. If the price is not cut, they will be just that much better off and if it is they have reduced their stocks to such small quantities that they will not suffer materially by the reduction.

There is more or less price cutting but little attention is paid to it except at the point where the reduced prices are in force. The condition is localized as much as possible and in this way the results are minimized. The year has been a good one with the average distributor of petroleum products, especially of gasoline. The distributor has realized more than a fair share of the margin between the costs of refined products and the price to the consumer. Only for short periods or in part has the refiner been able to get the larger share of the gross profits, but even the refiners have not done badly as a whole and many of them through their own distribution have been able to make a large success of their business.

The petroleum industry was one of the first to undertake to market its own products through its own outlets, but it has not advanced as far as some others in the application of the chain idea. It's learning rapidly. There is no wonderful secret back of the chain plan. The real secret, if there is efficient help and management, is how to gain and retain the confidence of customers, how to attract business without giving away the profits.

PANHANDLE FIELDS

(Continued from Page 84)

feet. North Vernon Oil Co.'s No. 1 Lutz was junked and abandoned at 2,685 feet. Shaw Oil Co.'s No. 8 Waggoner was shot with 20 quarts at 2,425-32 feet and had an initial production of 55 bbls. Sigler Oil Co.'s No. 1 Waggoner was drilled deeper to 2,350 feet from 2,043 feet and had an initial production of 100 bbls. Waggoner's No. 5 Waggoner was dry and abandoned at 2,432 feet. Waggoner Refining Co.'s No. 2 Waggoner had an initial production of 680 bbls. at 2,654-75 feet. Its No. 4 Waggoner had an initial production of 500 bbls. of oil and 100 bbls. of water at 2,655-76 feet.

RANGER DISTRICT

Brown County

Phil French's No. 5 Belvin had an initial production of 200 bbls. at 1,293-1,324 feet. Humble Oil & Refining Co.'s No. 18-B Kilgore was shot with 30 quarts in the sand found at 1,178-90 feet, was drilled to a total depth of 1,195 feet and had an initial production of 35 bbls. on the swab. Their No. 19-B Kilgore was shot with 20 quarts at 1,147-58 feet, was dry and abandoned. Mitcham & Preston's No. 1 Turner was dry and abandoned at 1,091 feet. Prairie Oil & Gas Co.'s No. 2 Shultz was shot with 5 quarts at 1,086-91 feet, was drilled to a total depth of 1,091 feet and had an initial production of 15 bbls. Williamson and others' No. 1-A Eddington was dry and abandoned at 1,151 feet. Eppenauer's No. 1 Shields was dry and abandoned at 1,200 feet. Riordan and others' No. 2 Riordan, location, was abandoned. Smith and others' No. 1 Wilson, location, was abandoned. Tex-Cal Oil Co.'s No. 2-B Martin had an initial production of 100 bbls. at 967-72 feet.

Comanche County

Humble Oil & Refining Co.'s No. 1 Walker was drilled to a total depth of 2,855 feet, was plugged back to 2,825 feet, was shot with 150 quarts from 2,765-2,825 feet, made 750,000 feet of gas and was plugged and abandoned.

Coleman County

Lloyd Oil Corp.'s No. 2 Bartholomew had an initial production of 310 bbls. at 1,439-45 feet. Their No. 3 Bartholomew had an initial production of 54 bbls. at 1,424-28 feet.

Callahan County

Continental Oil Co.'s No. 1 Alexander was dry and abandoned at 1,513 feet. Holden and others' No. 2 Cavanough was shot with 40 quarts at 1,633-60 feet, and had an initial production of 70 bbls. Hudson, Stewart & Robinson's No. 1 Swafford was junked and abandoned at 312 feet. Mook-Texas Oil Co.'s No. 3 Johnson was shot with 30 quarts at 1,598-1,618 feet and had an initial production of 50 bbls. Union Oil Co. of Nevada's No. 1 Alexander was dry and abandoned at 1,381 feet.

Eastland County

Eastland Oil Co.'s No. 1 Hitson was dry and abandoned at 3,855 feet. Texwa Oil Co.'s No. 1 Hightower was dry and abandoned at 1,310 feet. Their No. 5 Turner, location, was abandoned.

Palo Pinto County

Walter Frank's No. 1 Smith had an initial production of 1,669,000 feet of gas at 2,981-84 feet.

Shackelford County

Big State Oil Co.'s No. 1 Macon was dry and abandoned at 977 feet. Callihan & Carter Development Co.'s No. 1 Clark had an initial production of 52 bbls. at 657-58 feet. Coleman, Stiles and others' No. 1 Clark had an initial production of 38 bbls. at 645-48 feet. Hart & Gist's No. 4 Clark was dry and abandoned at 701 feet. Hughes and others' No. 2 Davis was dry and abandoned at 1,815 feet.

NEW CALIFORNIA FIELD OPENED BY OHIO CO.

(Continued from Page 45)

sheets indicate that each new deep zone has moved the apex of the structure at Santa Fe Springs a little farther northward. In other words, the top of the Nordstrum zone is a little north of the apex of the Bell horizon, while the Buckbee and O'Connell zones are progressively still farther north. This may mitigate against Oscar Howard's present deep test to some extent but it definitely proves the existence of another deep zone below the O'Connell now undergoing intensive development.

Other Deep Tests

The nearest approach to No. 7 Hathaway in point of depth is the Shell Co.'s No. 11 Nesa at Long Beach, now standing suspended at 9,280 feet. The next well in line at Santa Fe Springs is the General Petroleum's No. 213 Santa Fe, drilling at 8,650 feet, followed by The Texas Company's No. 10 Patterson in the same field fishing at 8,535 feet. The Associated's No. 3 Fulton, suspended at 8,300 feet, is another deep project at Santa Fe Springs. Other deep drillers include No. 1 Del Amo of the California Well Drilling Co., a wildcat in the Compton area of Los Angeles basin, at 8,500 feet, and the Standard's No. 5 Citrus, a wildcat near Saticoy in Ventura County, at 8,412 feet. The Standard Oil Co. has two other deep tests under way in California at present, both of them located in proven fields so far as shallow production is concerned. These are No. 27 on the Kern County land lease at Wheeler Ridge, down 8,406 feet, and No. 1 Mascot, rotating in the Midway-Sunset Field at 8,200 feet. The Shell's deep test, No. 1 Perris, in the latter field, is drilling ahead at 7,750 feet. The Petroleum Securities has two deep holes, No. 1 Robinson, standing suspended in the Kettleman Hills Field at 8,310 feet, and a wildcat between Huron and Coalinga, rotating at 7,100 feet. In the Long Beach Field, which is again coming to the front in point of depth, the Jergins Trust has No. 9 Municipal drilling in an oil sand at 8,300 feet.

A few years ago a 6,000-foot hole was something to get excited over but soon operators will be shooting for the 10,000-foot level, especially at Santa Fe Springs, where there is a good possibility of getting production down to somewhere around this level.

Activity in Coming Year

R. A. Broomfield, president of the California Oil & Gas Association, points out that more than 100 exploratory wells are being drilled in California in search of future petroleum reserves. It is expected that a great deal more exploratory work of similar nature will be done during the early part of the new year.

"Though drilling activities during 1930 may be curtailed 25 per cent, I do not wish to be understood as saying that the oil companies are planning to tighten up their purse strings," says Mr. Broomfield. "One company is negotiating to buy a fleet of oil tankers, another is making preparations to build a pipe line to connect two or three fields, another is cleaning out and rehabilitating 100 old wells, several others are installing new refinery equipment, and some are preparing to construct great compressor plants to be used in pumping excess gas back into depleted oil sands for the benefit of future generations."

Further than that, billions of feet of gas will, during the next six months, be pumped into exhausted or partially exhausted oil sands in some of the oil fields of the State, as a conservation measure, to remain there until required to meet an economic need. These conservation measures, President Broomfield points out, will be of value to the oil companies ultimately as well as a benefit to the public, because the gas which is being put back into the ground will assist in bringing more oil to the surface in future when it may be greatly needed.

All of this work calls for a wide range of activity. Roads must be built to prospective oil districts, materials must be hauled great distances to drilling sites; water, gas, oil and electric transmission lines must be constructed, grading must be done, surveying and mapping must be carried on, and a wide range of other activities conducted; so it is expected that the oil industry will spend a generous amount of money next year, even though general drilling slackens for a few months.

The oil companies in general are planning their work for the coming year with a view to conserving as much oil and gas as possible, keeping their working forces quite generally occupied, and if possible finding new sources of supply to be drawn upon in future years.

GAS FIELD ON KANSAS AIRPORT PROPERTY

(Continued from Page 48)

The generalized geological column for this area is as follows:

Surface sand and clay.
39 feet Chanute limestone.
10 feet Drum limestone.
20 feet Cherryvale shale.
25 feet Winterset lime.
5 feet Galesburg shale.
Kansas City formation, 18 feet Bethany Falls lime (?).
Kansas City formation 12 feet
Kansas City formation, 8 feet Hertha limestone.

Below these surface formations there is approximately 200 feet of Marmaton formation, 315 feet of Cherokee formation, and then 448 feet of Mississippi

lime, which in this area has not been drilled through.

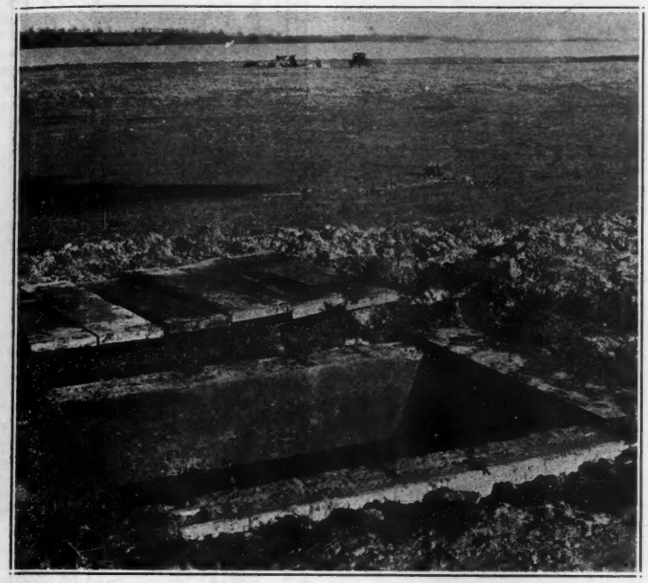
The Bartlesville sand is shown as being at about 550 feet and the interval between the base of the Bartlesville and the top of the Burgess sand is about 93 feet. The Burgess is reported as about 21 feet thick in this area and found about 12 feet above the top of the Mississippi lime series. The Burgess has not shown production in the few wells drilled into it in this area.

The deepest well in the Fairfax district was stopped 130 feet in the Missippi lime at a total depth of 828 feet.

Unique Problems

In addition to offering a very interesting bit of geological work this area presents some unique mechanical problems in drilling and completing wells.

As these wells are drilled in the channel of the Missouri River it is necessary to shut off subsurface waters that are flowing in the sand adjacent to the river



Gas well at Fairfax Airport in concrete-lined pit.

bed and to do this it is customary to set the first string of casing at a total depth of from 100 to 120 feet.

Then the hole is reduced and carried on to the bottom without further attempt to case it for the formations stand in good shape.

To complete the well two methods are used. If gas is found in the upper shale it is customary to run through it with a string of 2-inch tubing that is carrying a cup packer that fits the walls of the open hole just above the upper pay zone.

In this cup packer there is inserted the lower end of a string of 1-inch tubing which is carried to the surface and connected to the control head.

The 2-inch string is carried on to the second pay at about 350 feet depth and a regular wall packer is used there to seal it in the hole, and below this packer there is a short joint of pipe with a cage, and then enough perforated tubing to equal the thickness of the sand body, with the usual anchor joint at the bottom of the string.

This permits them to produce the gas from both horizons, the lower through the 2-inch tubing and the upper gas through the 1-inch string.

Avoiding Aircraft

Many of these wells are drilled in the area outside of the river levee and as aircraft is coming into and leaving the port at all hours it is necessary to protect them against fouling on the tubing and connections at the top of the wells.

To do this the practice in this part of the field is to dig a cellar from 8 to 10 feet deep and finish it with concrete and then cover this hole with heavy timbers and lay boards on them and cover the whole with a few inches of dirt so as to present as nearly as possible a smooth surface for the landing planes.

The accompanying picture shows a well of this type and another shows wells that are in another part of this field that are protected by pyramids of heavy logs bound together with wire line, after the tubing and connections have been carefully boxed.

The picture of the airport was taken recently and shows the numerous buildings there and other improvements and by comparing it with others taken last spring and in the fall of 1928 the growth of this port is clearly shown.

Some idea of the magnitude of the airport's operations can be secured by a statement recently issued to the effect that during one week there were 1,802 flying operations at the Fairfax airport, an exceptional seven days in activity, but an indication of what is just ahead for aviation. These operations were divided among students, transient and private planes and transport lines—1,106 students, 612 transient and private and 84 transport.

The development and sale of gas at this airport is of advantage at this time for it is forming a source of revenue while the Fairfax Airport, Inc., is so rapidly spending money in its expansion, as it has been its policy to develop the airport facilities just as quickly as possible since with better conditions at Kansas City for aircraft transportation it is felt this industry will expand rapidly.

Cheap Source of Fuel

The Kansas City Industrial Land Co. is also interested in gas in this area for it gives them a cheap source of fuel and is most acceptable to many industries who plan to locate in this middle western city.

In this way these large enterprises are doing much as the home owner and farmer is doing with his gas in the district south of Kansas City, for both groups are making the best possible use of nature's supply of gas. It is therefore of very general interest to a large number of people to learn something of the geology and developments of this area.

The prospecting of this region for gas and perhaps oil will be followed as closely as possible, for while there is a gas line to Kansas City from the Panhandle area of Texas to supply the city and adjacent territory with that commodity there is no reason for allowing possible natural resources of this character to lie unexplored in the immediate vicinity of this industrial center, for it should be cheaper to develop gas at a depth of from 200 to 400 feet or deeper and deliver it to the customer than it is to pipe it many hundreds of miles from distant gas fields.

It is not thought that these fields will ever develop sufficient gas to supply all of the needs of this community but it does seem possible that many industrial plants and small users will benefit by this work and it has been said that "every little bit helps" and in these days of conservation this seems to be doubly true for if it is possible to hold the larger gas and oil supplies in reserve for some future use it will best serve the nation's needs in later years.

PERU DISCOVERY ALMOST AS OLD AS DRAKE WELL

(Continued from Page 50)

panying table do not include the natural gasoline which is transferred by pipe line from the field plants to the Talara refinery for blending. The total Peruvian output of gasoline marketed as motor fuel is approximately equal to the sum of the refinery output plus the output of the natural gasoline plants.

The Talara refinery is equipped with four Tube and Tank cracking units with a reported total charging capacity of slightly more than 8,000 bbls. daily. Storage capacity at the refinery for crude and refined products is approximately 2,000,000 bbls., while the total field storage at La Brea and Parinas is in the neighborhood of 500,000 bbls.

The operations of the refinery of the Establecimiento Industrial de Petroleo de Zorritos during 1928 are typical of its scale during recent years. The throughput of crude amounted to 79,402 bbls., a daily average of 218. The output of gasoline totaled 16,307 bbls., or 20.54 per cent of the crude run; mineral spirits, 281 bbls.; kerosene, 15,641 bbls., or 19.70 per cent of the crude throughput; and fuel oil production amounted to 42,819 bbls., or 53.93 per cecnt. The output of lubricants amounted to 90 bbls., while losses accounted for 4,264 bbls., or 5.37 per cent.

Natural Gasoline Plants

Four natural gasoline plants are in operation in Peru, three of them being owned by the International Petroleum Co. and the fourth by the Lobitos Oil Co. Of the 1928 production of 26,939,812 gallons, the International plant at Lomitos produced 19,418,006 gallons; that on Section 38 in Negritos, 5,142,776; while the third and newest plant, on Section 36, had an output of 286,926 gallons. The plant of the Lobitos company produced the remaining 2,092,104 gallons.

The International plant on Section 38 in Negritos is the oldest in Peru, having begun its commercial operation in 1922, during which year it produced 533,318 gallons. The plant was originally equipped with two compressors, the number being increased to six during 1923. From April 22 to May 13, 1924, the plant was shut down while being changed over to a combination pressure and absorption system, operating at 40 pounds throughout the system. The International plant at Lomitos began operating in the middle of December, 1925, while the third plant of the International, that on Section 36, began operating in January, 1928. The plant of the Lobitos Oil Co. began operating late in November, 1927.

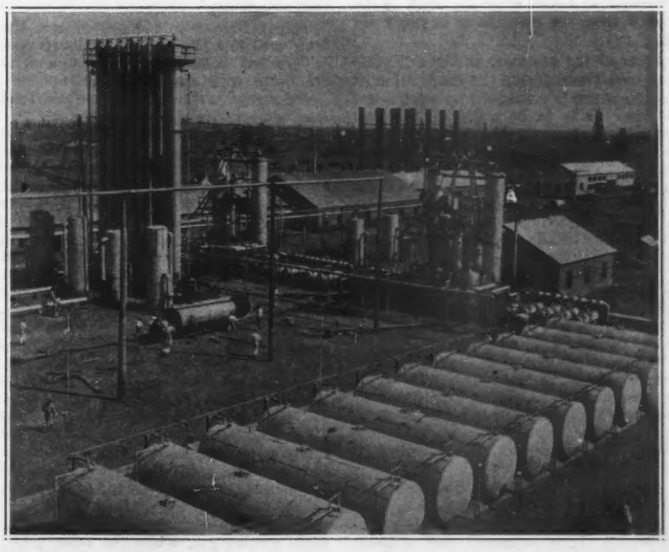
The recovery of gasoline ranges between 1.4 and 2 gallons per 1,000 feet. During 1928 the Lobitos plant recovered 2,092,104 gallons through processing 1,439,393,000 feet, or an average recovery of 1.45 gallons per 1,000 feet. The natural gasoline from the Lobitos plant is pumped to the Talara refinery in a 2-inch pipe line, 12 miles long, with electrically welded joints. The pumping capacity from Lobitos to Talara is approximately 2,030 gallons per hour. Of the 1928 production of 2,092,104 gallons, deliveries at Talara amounted to 2,087,359 gallons, with an average gravity of 77.6° A.P.I. Gasoline from the Lomitos plant of the International is pumped 10 kilometers through a 3-inch line to the Talara refinery. The dry gas is used for fuel and for repressuring, it being reported that a large proportion of the 1928 increase in crude oil production was a direct result of the repressuring and gas-lift operations. The plants on Sections 36 and 38 are relatively close to the Talara refinery. Of the 24,847,708 gallons produced at the three In-

CRUDE OIL PRODUCTION, EXPORTS AND REFINERY OUTPUT IN PERU, 1920-1928
(Figures in barrels of 42 gallons each)

				Refinery output of—					
Year—	Crude oil produced	Crude oil exported	Crude oil refined	Gasoline	Crude naphtha	Kerosene	Gas and fuel oil	Lubricants	Asphalt	Coke
1920.....	2,816,649	624,417	1,954,352	119,768	416,241	81,355	1,295,173	4,743	....	....
1921.....	3,699,280	877,320	2,668,756	143,368	718,085	122,092	1,618,297	2,966	....	....
1922.....	5,313,854	1,914,234	3,196,626	223,943	925,888	184,228	1,788,271	13,259	....	....
1923.....	5,698,510	2,457,630	3,433,916	209,181	1,110,622	125,921	1,910,522	14,586	....	....
1924.....	7,924,700	4,027,448	3,243,963	613,920	572,608	166,544	1,904,089	21,899	....	....
1925.....	9,231,938	4,688,609	4,267,464	962,314	565,962	302,314	2,324,376	24,140	....	....
1926.....	10,762,393	6,029,494	4,441,271	1,063,565	526,432	289,685	2,443,310	29,005	....	860
1927.....	10,127,432	5,479,998	4,839,676	2,124,580	15,167	648,213	1,877,078	43,916	724	6,449
1928.....	12,006,402	5,869,491	5,552,801	2,406,012	17,364	213,417	2,775,405	32,591	2,492	4,545

Source—Official reports of Peruvian government.

GASOLINE PLANT IN PERUVIAN FIELD



—By Ewing Galloway, N. Y.

Built by International Petroleum Co., at Negritos.

ternational plants during 1928, 23,271,192 gallons, with an average gravity of 79° A.P.I., was delivered to the Talara refinery. The following table gives the combined output in gallons of the Peruvian plants.

NATURAL GASOLINE PRODUCTION IN PERU, 1922-1928

Year—	Production (gals.)	Daily average (gals.)
1922	533,816	1,467
1923	1,359,440	3,724
1924	2,712,179	7,431
1925	3,826,721	10,484
1926	11,100,467	30,412
1927	17,453,305	52,762
1928	26,939,812	73,622

Demand for Gasoline

The demand for gasoline in Peru has increased from approximately 64,000 bbls. in 1920 to around 330,000 bbls. during 1928, a five-fold increase. The local demand for gasoline is, however, only about 12 per cent of the output of the two refineries and the remainder is shipped in export trade, principally to other South American countries. The largest consumers of Peruvian gasoline are. in order, Argentina, which took about 865.000 bbls. during 1928; Brazil, taking about 470,000 bbls., and Chile, about 250.000 bbls. The shipment of about 770,000 bbls. to continental Europe and about 75,000 bbls. to England were reported in 1928. Gasoline exports from Peru, following the program of refinery output, did not form a major portion of the foreign shipments until 1926. Prior to that time, the principal light refinery output was crude naphtha, and it was shipped in relatively large quantities to other countries for further processing. Fuel oil exports are slightly in excess of a million barrels yearly, while the local fuel oil consumption is limited almost entirely to the fuel needs of the oil companies.

MAKE BUILDING BRICK OF OIL SHALE RESIDUE

Estonian oil shale leaves about 50 per cent of its value after burning in the form of gases, ashes and slag, which costs considerable to remove from the furnace. As a result, oil shale as a fuel has found little favor in the eyes of industrialists.

The Baltische Baumwollspinnerei began using oil shale as fuel in 1923 and immediately took up the problem of using the ashes by manufacturing brick. In 1927 samples were sent to foreign countries for tests. In the government laboratories of Germany, it was determined that the new brick was suitable for construction purposes. In July, 1929, a factory was completed for the manufacture of brick. The machinery delivered by a German firm named Bernhard Sohn, has a daily 8-hour capacity of 12.000 bricks. Twenty-four hours after the brick is delivered from the machine it is ready for use.

Some of the processes in the manufacture take place during the combustion of the oil, which is controlled by mechanical devices. It is to be noted that no cement is necessary in the manufacture of the brick which is put into forms and pressed. The brick is dark gray to black in color, is regular in form, and sharp-edged. The binding qualities are similar to those possessed by other building brick. The binding of the brick is not only mechanical but also chemical. Its compressive strength during tests was found to be 178 kilos per square centimeter, which may be increased if desired. Its weight is 5 to 10 per cent less than ordinary brick, and has good weathering qualities, a test wall having been constructed last year showing no unusual effects from the weather. It is a good heat insulator transmitting about 50 per cent less than the ordinary brick. One of the company's boilers was entirely insulated by means of this brick.

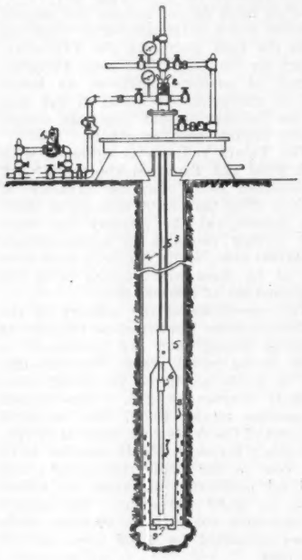
On account of it being a by-product, it is possible to sell the brick at a very low price (30 per cent cheaper than other brick). It is estimated that a house constructed of this brick will not exceed the cost of a similar house built of wood.

INTERMITTENT INDUCED SYSTEM FOR GAS LIFT IS SUCCESSFUL

By L. G. E. Bignell

Old fields and new present their problems in production and since the introduction of gas lift into the oil industry there has been many attempts to improve the effectiveness of this method and justify its application by making it useful over a longer time than has been usual with the regular type of gas lift installations.

Ratio of oil level to total lift has its effect in making the gas lift efficient, and it has been found that in some instances the oil level in the well has



Key to diagram.

1 *JAT Magnetic Valve.*
2 *Packing Head.*
3 *Flow Tube or Macaroni.*
4 *Tubing.*
5 *JAT Chamber Valve.*
6 *Check Valve.*
7 *"Skeeter Bill."*
8 *Chamber.*
9 *Standing Valve.*

fallen to that point where the straight gas lift was not very useful.

Knowing these conditions to exist Jordan and Taylor of Los Angeles, Calif., have been at work for several years upon this problem and have designed apparatus that has been used quite successfully in intermittent induced flow systems whereby it was possible to continue to use the surface compressor plant for a much longer time than it could have been used if the straight gas lift method alone had been continued.

This intermittent induced system has been used in wells as deep as 7,000 feet, in crooked holes where pumping with the beam type apparatus was not possible, and in wells where the fluid level was comparatively low.

The intermittent injection of gas for producing wells has the advantage of allowing the fluid level in the well to build up for a period of time, dependent upon the rate of influx of oil into the hole, and in this way there is a higher fluid head against which the compressed gas could work and eject the fluid from the hole.

Governed by Gastributor

The JAT magnetic valve which operates on a predetermined cycle is governed by the JAT gastributor. The gastributor is a timing device which controls the operation of the JAT magnetic valves. A maximum of 12 valves may be handled by one timer under ideal conditions. Six wells may be handled easily by one timer under working conditions. The setting of the gastributor is accomplished by simply inserting screws in the panels. One panel controls the rotation or order in which the wells receive gas, while the other panel governs the length of injection and filling periods.

Desiring to inject gas into a particular well a screw is inserted in the proper place to connect a contact of the distributor to a well connection. When the rotating member of the distributor reaches the contact so connected, the magnetic valve circuit of the particular well is closed. The closing of the circuit actuates the magnet of the valve, opening a pilot valve and allowing high pressure gas to open the valve which permits gas to enter the well. When the rotating wiper leaves the contact the circuit is broken and the valve closes.

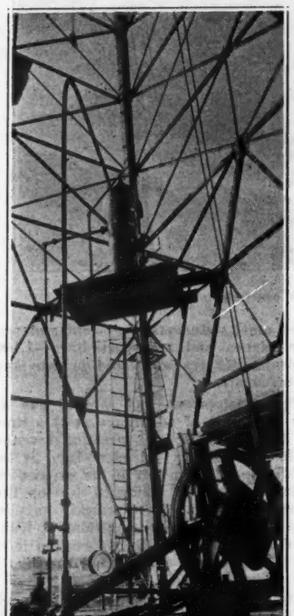
The more recent development of this idea is known as the JAT Oilift displacement pump which offers a system of gas lift applicable to wells of the pumping class in which the fluid level is too low to successfully produce by the usual methods.

To produce a well by the use of the JAT Oilift displacement pump valve this device is used in connection with the JAT gastributor and magnetic valve. The system is shown in a diagram accompanying this article.

The chamber consists of casing as large as the well will take and of sufficient length to guarantee the desired production. A standing valve in the bottom of the chamber permits the entrance of oil.

Chamber Valve

The functioning of the chamber is dependent upon the JAT Oilift displacement

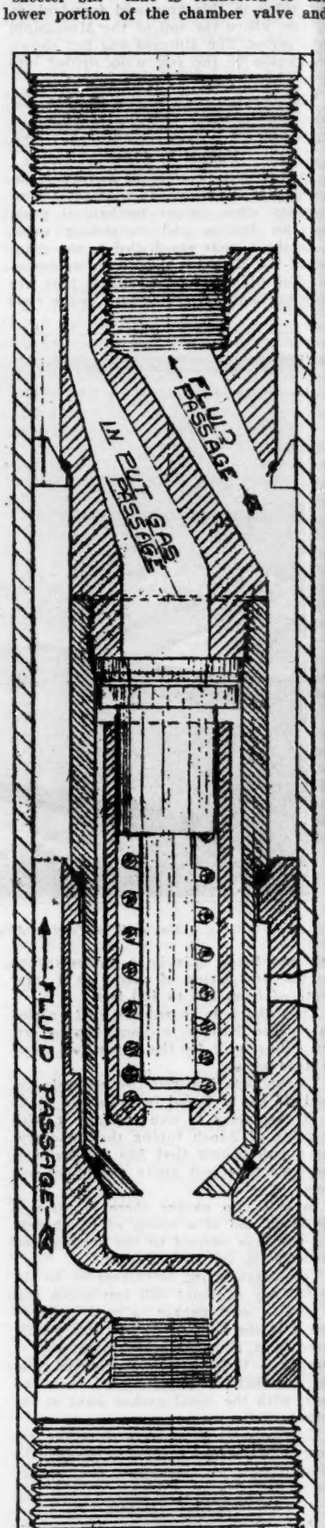


JAT oil displacement pump installation in the Little River Field, Oklahoma.

pump valve or chamber valve, which controls the entrance of gas to the chamber and exhaust of gas to the casing.

The shell of this valve is made up to the top of the chamber and the entire assembly run in the well on the outside string of tubing to the desired depth. The shoe of the chamber valve containing the valve mechanism is run in on the inside string of tubing. The valve mechanism is easily accessible for inspection by pulling the inside string without necessitating any movement of the chamber or the outside tubing. The seating of the shoe in the shell completes the oil and gas passages of the valve.

High gas pressure introduced into the annular space between the two strings by opening of the magnetic valve will actuate the chamber valve at the same time closing the relief port. The gas entering the top of the chamber forces the oil that has accumulated in the chamber up a length of tubing called the "skeeter bill" that is connected to the lower portion of the chamber valve and



Details of chamber valve.

acts as an eduction tube and directs the flow of oil upward past a check valve and through the fluid passage of the chamber valve and up the inside string to the trap at the surface.

When sufficient gas has been injected

to insure the delivery of a slug of oil that has accumulated in the chamber the magnetic valve closes.

The pressure then drops sufficiently to permit the chamber valve to close and the relief port opens and allows the gas in the chamber to be dissipated into the annular space between casing and tubing. The oil that has accumulated in the space between the casing and the outside of the chamber has by that time built up sufficient head to again open the standing valve at the bottom of the chamber and enter it, and the cycle is repeated.

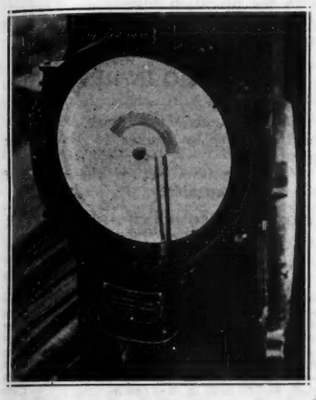
Used Successfully

This flowing device has been used successfully in a number of wells in California and the Independent Oil & Gas Co. has five of the pumps installed in wells on its Harris lease in Section 23-7-6 in the Little River area, Oklahoma.

Two of these wells are producing from the Cromwell sand found at a depth of about 3,100 feet and the balance have Wilcox production from about 4,380 feet.

The oilifts are used in connection with gasoline plants which compress the gas to about 350 pounds pressure before it is admitted to the well and the gas is recycled constantly.

The tubing sizes used in these wells are 1½-inch inside of 2½-inch upset,



Pressure recording gauge used with JAT installation.

and 2-inch inside of 3-inch upset. The outside strings may be either plain or upset.

The chambers at the bottom of the wells are generally made from 5⅛-inch casing and they vary in length from 40 to 150 feet depending upon the fluid level built up in the hole by the natural well head. A 3¾-inch regular type standing valve with a 2½-inch opening is used at the bottom of the chamber.

The sands vary from 9 to 16 feet in thickness and the general practice is to set the chamber in the sand body so that the fluid is not drained below the top of the sand at any time.

Different wells operate on different time cycles, varying from 5 to 12 shots per hour. In No. 2 Harris, a well making about 180 bbls. of oil daily and using this system, it has been found that it requires about 700 cubic feet of gas per barrel of oil produced to operate the displacement pump.

Increase Gasoline Recovery

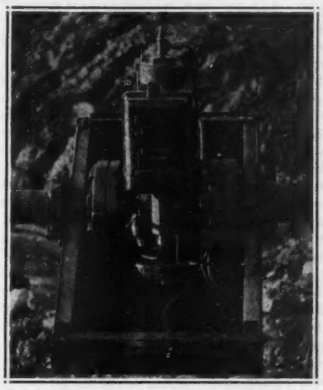
It has been noted that by this method of production the natural gasoline content of the gas has been increased somewhat while the gravity of the oil has been reduced about 1° A.P.I standard. The oil varies in grade from 39 to 41° gravity A.P.I.

This gravity of oil is higher than it was from these wells when the straight gas lift was used, and as the gas is passed through the gasoline plant the gasoline content is recovered so there is no loss by the use of this system.

It is claimed this system has reduced the cost of producing oil below what it was when the wells were pumping and it has also increased the quantity of oil produced.

It has been observed that this system of pumping wells is not affected by sand that may enter the chamber with the oil and the movement of the fluid at the bottom of the chamber during each ejection period is such that the sand that may have entered and settled on the standing valve is automatically removed and carried upward and out of the well by the rush of oil as it enters the eduction tube, which extends to a point just above the bottom of the chamber.

The oil as delivered into the trap at the surface is a slug, that is, not broken up by gas and during the first part of each cycle about 80 per cent of the fluid



JAT magnetic valve.

is in a solid stream, and as the gas pressure is relieved in the inside string the last 20 per cent of the oil is sprayed into the trap.

This system of producing wells has been in use by the Independent Oil & Gas Co. for about three months and is giving it such good satisfaction that it is contemplating introducing it into other wells where conditions are such that it is anticipated it will give equally good service.

OIL PROSPECTING WORK IN PROGRESS IN GERMANY

Two new oil finds in Hanover Province have had a marked development on crude oil prospecting in Germany this year. It may be expected that Germany's crude oil production that attained 92,000 metric tons (only 644,000 bbls.) in 1928, will exceed this figure this year. Twelve deeper borings to the east of Oberg village have encountered fresh oil, with a 20 per cent gasoline content, that yield initially about 50,000 kilos daily. The other successful operation is credited to the Anton Raky Aktiengesellschaft (Gewerkschaft Deutscher Michel) which uncovered oil at a location 10 kilometers north of Peine.

One of the east Oberg bore holes that hit oil 517 meters deep, and cost 40,000 marks, has already produced 400,000 marks value; this is so-called "Ebag" Hole No. 52. Another, No. 78, west of Oberg, struck at 280 meters and has yielded 200,000 marks of oil value so far.

Development is being rather feverishly followed west of Oberg at deeper penetrations. Its success this year has already resulted in building a short pipe line from wells to the loading station of the Ilseder Huette.

It remains to be seen says Trade Commissioner William T. Daugherty, Berlin, what increase in production this year will occur in Oberg territory that only produced 7,000 tons oil out of Germany's total of 92,000 tons in 1928. It will be recalled that heaviest production of oil here is divided about equally between the Haenigsen-Nienhagen and the Wietze territories, respectively, operated chiefly by Deutsche Petroleum Aktiengesellschaft of Berlin, and Gewerkschaft Elwerath, Hanover, accounting together for 80 per cent or more of total German crude oil output.

Oberg oil is refined primarily by the Deutsche Gasolin-Aktiengesellschaft in its refinery Erdoelwerk Dollbergen on the Berlin-Hanover railway, and by the firm of Dr. W. H. Lepenau und Company, Salzbergen, belonging to Noddeutsche Mineraloel Aktiengesellschaft, Hanover.

SELECTION OF PRESSURE WELLS FOR REPRESSURING OPERATIONS

By Winston P. Henry
President of the Putnam Oil Co., Etc.

At the meeting of the Mid-Continent District of the American Petroleum Institute Division of Production Engineering, it was the consensus of opinion during the oral discussion "that good producers make the best pressure wells from standpoint of efficiency and recovery." The operations of our companies during the past four years in repressuring some 600 wells has led us to seriously question the wisdom of this conclusion.

In the first place, it is obvious that by taking these good producers off production the income from the property is seriously cut down and the starting point of the production is so lowered that unless a very large increase is secured from the remaining pumping wells the original point of production when repressuring is commenced may never be reached again. It is argued in favor of using the best producing wells on a lease that they almost invariably have the coarsest and softest bodies of "pay sand" and therefore will absorb large quantities of air at a lower pressure than the poorest producing wells. This, of course, is true, but why try to push oil from a soft body of sand to and through a harder, finer and generally thinner body of sand?

The further the air travels from the point of injection its pressure is reduced probably in ratio to the distance traveled if the sand texture is uniform, but where the air meets an ever-increasing hardness in the sand the further it travels from the pressure well it necessarily loses its pressure more and more rapidly. In our opinion pressure is probably as important in its propelling force as volume. Now what happens when air is introduced into an edge well where the sand body has thinned out and become relatively hard? In the first place, it has the disadvantage of taking a smaller volume of air than an inside well, but once sufficient pressure has been applied to introduce a reasonable amount of air, as it travels away from the pressure well it meets a more or less gradual coarsening and thickening of the sand body, and the oil being pushed and carried by the infinitesimal bubbles of air will meet a relatively easier resistance and therefore will do its work more efficiently. Also, of course, by the selection of the poorest producing wells, the daily production is only slightly cut down during the time repressuring is becoming effective.

There is still another phase of this problem that has convinced us that the selection of the smallest producing wells is the best method. On some properties where we selected good producers because of their geophysical location, the air of course traveled to the point of least resistance which were other good producers and in many instances directly channeled to these wells. We endeavored to back pressure these pumping wells both by raising the fluid level by use of "knock-off holes" and by pinching in our outlets for the air-gas at the casinghead. We endeavored to hold as much back pressure as each well would stand without hurting its daily production. However, in many instances this back pressure was not sufficient to drive the air underground away from these channels out through the harder portions of the sand. In these cases, we were forced to increase the back pressure to the point where the production from these wells was seriously cut down and in some instances we have shut these wells entirely at the casinghead allowing no air-gas to escape. Even this extreme remedy has failed on some of our properties to force the air from the soft streaks to the edge wells or inside hard sand wells. Much of this trouble is eliminated by the choice of the smaller producers, because if the air breaks through to the best producers in the soft streaks of sand, it takes a much smaller back pressure to distribute the air to the portions of the lease not yet affected.

NO HITCH EXPECTED ON ANGLO-AMERICAN

(Continued from Page 211)

to go ahead with a rotary drilling campaign. The unfavorable Colombian legislation respecting oil development, which has retarded operations of all the American companies holding properties in that country, now appears due for a definite revision, which will facilitate American development work in Colombia.

A special meeting of stockholders has been called for December 30 to vote on a proposal to increase the company's capital from 1,000,000 shares of $1 par stock to 5,000,000 shares of $1 par. The additional capital will provide for further drilling operations, rentals on leases, working capital and the acquisition of additional property.

Louis T. McFadden, congressman from Pennsylvania for the past 16 years and chairman of the house committee on banking and currency, has been elected president of Magdalena Syndicate, succeeding Wilson E. Griffiths, deceased.

Middle States Oil

Middle States Oil Corp., in receivership for several years, has been sold at public auction to a new company formed by the reorganization committee to take over the assets of Middle States Oil and its equity in 53 subsidiary companies. The sale followed a decree of the federal court.

Tide Water Associated

Tide Water Associated Oil Co. has resumed dividends on its common stock with the declaration of a dividend of 60 cents per annum for 1930, payable in two semiannual payments, the first on February 15 to stock of record January 31, and the second on August 15 to stock of record July 31. The total amount of the dividend, the company announced, is less than 40 per cent of the estimated earnings for the coming year available for the common, after payment of preferred dividends and other charges.

The company now owns 95.42 per cent of the common stock of Tide Water Oil and 95.53 per cent of the common stock of the Associated Oil Co. The board authorized officers to exchange, on or before February 15, 1930, 1¾ shares of Tide Water Associated common for one share of Tide Water Oil common and three shares of Tide Water Associated common for one share of Associated Oil common.

The board of directors of Tide Water Associated also authorized an employe stock purchase plan during a three-year period equal to 10 per cent of annual wages or salary.

Mexican Eagle Oil

Mexican Eagle Oil Co., Ltd., will exercise its option on July 2 next to purchase entire outstanding 400,000 shares of Eagle Oil Transport Co., Ltd., £5 sterling par value, at £6 plus any dividend accruing to date of purchase. The Transport company was formed in 1912 to build a tank steamer fleet for marketing products of Mexican Eagle Oil. Canadian Eagle Oil Co., which is operating all the company's tankers on charter, owns the entire issue of 600,000 ordinary £5 sterling par shares.

NEW YORK STANDARD TO ACQUIRE WHITE EAGLE

(Continued from Page 204)

with a total capacity of 216,500 bbls. daily. Most of this capacity is located along the West Coast, Gulf Coast and East Coast. The three refineries of the White Eagle Co. are located at Fort

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Marcell Announcement

In announcing the plan of merger Mr. Marcell said in part:

"For sometime past I have been impressed with the economic advantage of the development of larger industrial units. The need in modern industry for large capital resources, wide diversity of trade territory and highly specialized research and development organizations is apparent. I have become convinced that in the oil industry such units, particularly through their holdings of large reserves of raw material, have a distinct economic advantage, and further that the practical way for our company to secure these advantages is by an alliance with an organization already possessing them.

"After months of negotiation, your officers and directors have been able to work out a proposal of merger with the Standard Oil Co. of New York. This company has a record of more than 40 years of successful operation and is one of the largest and strongest of the old Standard Oil companies. It distributes its products directly or through subsidiaries in New York, in New England states, Texas, Oklahoma, Arkansas, New Mexico, Louisiana, California, Arizona, Oregon and Washington. It has the major marketing position in many foreign countries including China, Japan, India and other countries of Asia and the Levant. It has through its own organization and wholly owned subsidiaries a crude oil production of over 110,000 bbls. per day net, refineries with a capacity of over 200,000 bbls. per day, large trunk pipe lines and tank steamers and other marine facilities for the world-wide transportation of petroleum products. By acquiring the White Eagle Co., distribution will be extended into the states of Kansas, Colorado, Utah, Wyoming, Montana, North and South Dakota, Minnesota, Wisconsin, Iowa, Nebraska and Missouri."

PRORATION TO CONTINUE THROUGH THE WINTER

(Continued from Page 56)

each instance after allowing seven days for the cement to set; provided the maximum shut-in time in each of the pools shall be according to the following schedule:

	No. days cement to set	No. days open flow for test	Days shut down	Total
Oklahoma City ..	7	1	57	65
East Earlsboro ..	7	1	41	49
Seminole et al ..	7	1	16	24

All purchasers and carriers of oil are ordered by the Commission not to purchase or carry oil produced in violation of the Commission's orders.

In presenting the petition Mr. Franklin made the following statement of the conditions surrounding production and demand:

"As the crude oil production of the State of Oklahoma, by reason of the nature of the business, enters into competition with crude production throughout the United States, and imports of crude thereto, a state of overproduction throughout the United States resulting from all domestic production and crude imports must be taken into account in determining a condition of overproduction in the State of Oklahoma. Despite restrictive measures upon production in California, Texas and Oklahoma, in force during the year 1929, storage stocks of crude and refined products have increased 67,586,000 bbls. over similar storage stocks held January 1, 1929; and even as of January 1, 1929, the total storage stocks of that period, 613,204,000 bbls., were largely in excess of the industry's requirements and indicated a state of overproduction. In Oklahoma at the time this petition is filed the daily production without proration would be about 799,000 bbls. and the total daily demand is less than 650,000 bbls. The excess of what would be produced without proration exceeds the demand by at least 149,000 bbls. per day. The marketing branch of the Oklahoma petroleum industry is confronted with the seasonal low period in the demand for refined products, which will continue during the remainder of the winter months."

Ray M. Collins will continue as umpire of all the fields under proration and the method of applying proration in the fields will be the same as that in effect at present.

Oklahoma City operators decided last week that in case the Commission should issue the order for a continuance, the Oklahoma City Pool would be prorated in the following manner in January:

All A wells to be opened January 1, 2, 3 and 4.

All B wells to be opened January 4, 5, 6, 7, 8, and 9.

All A wells to be opened January 9, 10, 11, 12, 13 and 14.

All B wells to be opened January 14, 15, 16, 17, 18 and 19.

All A wells to be opened January 19, 20, 21, 22 and 23.

All B wells to be opened January 23, 24, 25, 26, 27 and 28.

All A wells to be opened January 29, 30 and 31.

The above schedule provides that both the A and B wells will produce on certain days, namely January 4, 9 and 23. The A and B wells are those which are not completely shut in in accordance with the proration rules.

The February schedule will be made up late in January.

WHO'S WHO IN REFINING

(Continued from Page 203)

ural gasoline by tanker to East Coast points.

Following is a list of the plants of the two companies:

THE TEXAS COMPANY OF DELAWARE

Location—Oklahoma	Daily plant capacity gallons
Sec. 8, T. 17n, R. 12e, Creek Co.	13,900
Sec. 16, T. 17n, R. 7e, Creek Co.	11,000
Sec. 22, T. 15n, R. 14e, Okmulgee Co.	6,800
Sec. 9, T. 18n, R. 7e, Creek Co.	2,800
Sec. 11, T. 14n, R. 12e, Okmulgee Co.	1,500
Sec. 2, T. 14n, R. 5e, Lincoln Co.	12,200
Sec. 22, T. 15n, R. 11e, Okmulgee Co.	4,500
Sec. 30, T. 25n, R. 8e, Osage Co.	5,000
Sec. 2, T. 18n, R. 12e, Tulsa Co.	800
Sec. 7, T. 8n, R. 5e, Pottawatomie Co.	25,000
Kansas	
Sec. 31, T. 30n, R. 6e, Cowley Co.	12,400
Sec. 28, T. 26n, R. 5e, Butler Co.	6,000
Louisiana	
Sec. 3, T. 20n, R. 16w, Caddo Parish	4,000
Sec. 23, T. 21n, R. 15w, Caddo Parish	18,800
Sec. 19, T. 20n, R. 15w, Caddo Parish	600
Sec. 34, T. 13n, R. 12w, DeSoto Par.	4,000
Texas	
½ m. NW Electra, Wichita Co.	9,300
3 m. NW Burkburnett, Wichita Co.	33,000
2½ mi. NE Olney, Archer Co.	7,000
Total	178,600

THE TEXAS COMPANY (CALIFORNIA)

Location—California	
Los Angeles County	14,000
Los Angeles County	20,000
Los Angeles County	12,000
Los Angeles County	12,000
Los Angeles County	75,000
Los Angeles County	17,000
Kings County (Kettleman Hills)	60,000
Los Angeles County	120,000
Los Angeles County	20,000
Los Angeles County	2,500
Ventura County	12,000
Ventura County (Shields lease)	3,000
Total	367,500

TAG HAS SHREVEPORT BRANCH

The C. J. Tagliabue Manufacturing Co., Brooklyn, N. Y., maker of industrial instruments has opened a branch factory in Shreveport, La., to give company's products in Texas, Oklahoma, Kansas, Missouri, Arkansas, Mississippi, Tennessee, Louisiana and Alabama better service. The prime function of the new factory is repair work, with special attention to emergency orders. There will be maintained stocks of oil testing instruments, thermometers both of the industrial and laboratory types, hydrometers and kindred instruments, standard recording thermometers and recording pressure gauges, standard automatic controllers for temperature and pressure and various other classes of instruments. The Shreveport factory is in charge of C. L. Huffman, district manager.

Venezuela May Not Produce More Oil In 1930 Than 1929

Solution of the problem whether the Venezuelan fields will prove an element of greatly increased production in 1930 will undoubtedly be found in limited transportation facilities, says the Wall Street Journal.

A survey of the shipping programs of the various units producing in Venezuela indicates there are no lake tank steamers on order.

Inasmuch as virtually all Venezuela production has to move to markets out of Lake Maracaibo in tank steamer bottoms and as these tank steamers are a special type of craft—only 12-foot draft boats can be used—the outlook is for Venezuela to produce no more oil next year than was produced in 1929. Lake steamer tonnage, and not available production, is the "neck of the bottle" in Venezuelan fields.

The fleet engaged in transporting oil from the Lake region to deep water, for refining or trans-shipment, is kept steadily engaged. Hence, with no new ships ordered, Venezuela production appears "pegged" somewhere around the 1929 average of 370,000 bbls. daily. This is also the current daily production.

Considering existing world oil conditions of a plentiful supply, it appears a safe deduction that, with no additional lake tonnage available, development work in 1930 will be largely in the nature of exploratory drilling to prove reserves for future requirements.

The present properties have been developed sufficiently to keep the available water transport facilities engaged through 1930, it is believed. The several large operators in the lake area, where the big flush production exists, have considerable production shut in. This could be drawn upon if natural decline in flow should occur during the ensuing year.

Production from the new Tarra Field, to be opened early next year by a pipe line, will move to the lake front. There it will be part and parcel of the aggregate production of Venezuela to be moved by the available tanker tonnage.

Venezuela fields have been a growing influence in the world oil markets the past several years. Two years ago they produced 63,134,000 bbls. and last year supplanted, in size, both Russia and Mexico, becoming the world's second largest producer, with 105,675,000 bbls. They will retain this position this year with production at approximately 135,000,000 bbls.

Since it appears now that Venezuela's prolific fields will not be a factor of unrestrained production in 1930, this should prove a decidedly helpful influence in the outlook for the oil industry next year. Oil, like many other commodities, is international so, though it may be produced at great distance, it becomes a factor in far-off markets.

Three companies dominate Venezuela's production of some 370,000 bbls. daily. The Royal Dutch-Shell and its affiliates produce some 173,000 bbls. of the daily total; Lago Petroleum (Pan American) has about 93,000 bbls daily, and Gulf close to 100,000 bbls. a day.

HELIUM APPROPRIATION ASKED FOR AMARILLO

WASHINGTON, D. C., Dec. 23.—A sufficient appropriation from Congress to insure continuous operation of the Government's helium plant at Amarillo, Tex., has been asked of the appropriations committee considering the appropriation bill for the Navy Department by the United States Bureau of Mines under whose auspices the work is conducted. About one-half the Government's helium needs is supplied by the Amarillo plant and the remainder by the Kentucky Oxygen & Hydrogen Co., which operates wells in Kansas.

Representative Marvin Jones of the Amarillo district at a conference with Secretary of Commerce Robert P. Lamont urged that arrangements be made to all the nation's needs, both for the army and navy, supplied by the Amarillo plant. He urged that the Government should supply its own helium as a national defense insurance as well as a conservation measure.

Mr. Jones told the secretary that each month that the Amarillo plant has been in operation the unit of cost has been reduced and by continuous operation the plant would probably be able to further reduce this cost.

According to Mr. Jones, there are at present inadequate storage facilities at the Amarillo plant and in order to maintain continuous operation the year around there additions for storing the helium should be built. The Bureau of Mines has assured the Texas representative it is in position to furnish all the Government's helium needs at the Amarillo plant.

HOLIDAY INTERRUPTS OPERATIONS IN STEEL

By B. E. V. Luty

PITTSBURGH, Pa., Dec. 23.—It is difficult to construct an estimate of the average rate at which pipe and tube plants are running, but a fair guess for production in the entire month of December would be between one-fourth and one-third of full capacity, with no material distinction between the welded pipe and the seamless tube mills. Operations vary from week to week. Thus one large plant was entirely closed week before last, while last week it ran at about 40 per cent. This week operations are light all around as the holiday splits the week in an awkward fashion and unless there is some special reason it is preferable to have a plant down for the whole week.

From the mill standpoint the standard or merchant pipe market is very firm in the matter of prices, despite the light demand. The market is indeed steadier than usual. There may be irregularities in jobbers' sales in some sections, but the mill or primary market is doing very well, easily better than it has averaged since the first of the year as there was a spell when prices were rather uncertain.

Demand for standard pipe is light for several reasons. There has been less building this year than last, the season is over, and jobbers and manufacturing consumers are particularly rigid in their plans to have January inventories down to the lowest possible level.

There has been no line pipe buying of any consequence since the California natural gas line was arranged a couple of months or so ago, this by rearrangement being for 26-inch pipe, deliveries of which have been started from Milwaukee, to the Pacific Gas & Electric Co., which is understood to have an arrangement with Standard Oil of California whereby the recent inquiry of the latter for line pipe has been dropped. The latest information is that the Texas to Chicago line, for which there were two rival projects, will be laid by Cities Service Co., but the pipe mills hardly expect actual inquiry to appear for the pipe until some time after the first of the year.

The steel industry as a whole has just run into the slackest of its slack period. Consumption in general is at its seasonally light level, and just before the annual inventory date all buyers are particularly anxious to hold back shipments. Steel production this month to date has averaged but little above 60 per cent of capacity and this week it is likely to be particularly light, on account of the holiday making a bad break so that it is hardly worth while to run at all this week.

Generally speaking, the tone of the steel market is regarded as improved, but in essence that probably means little more than that buyers were very much scared for several weeks after the stock market break and are now less scared. There is no material improvement in actual prospects for consumption, and

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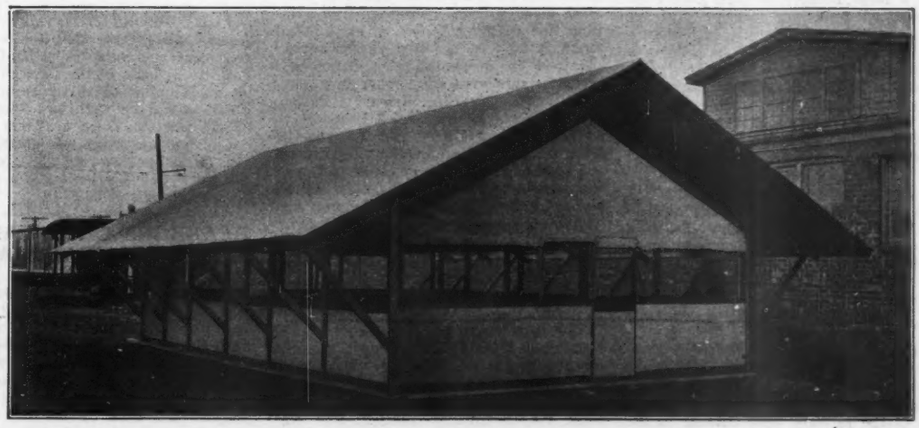

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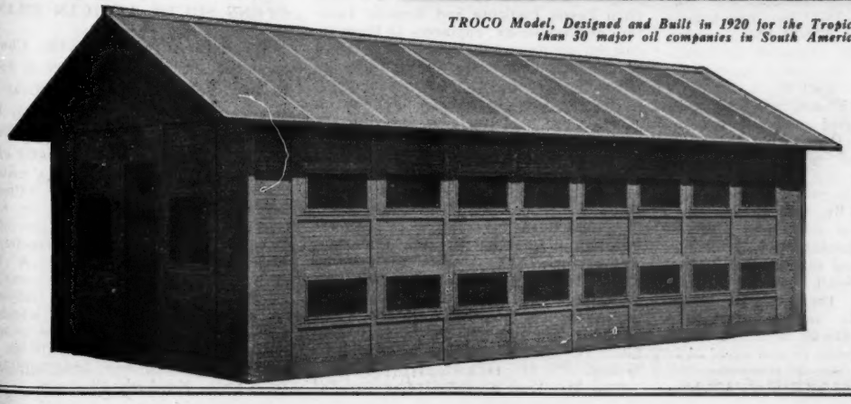

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the new year will probably open somewhat sluggishly, consumers feeling their way carefully. However, the drastic curtailment in stocks on account of inventory will doubtless lead to some loosening up immediately after the turn of the year.

Finished steel prices are holding remarkably well all along the line. There have been some irregularities recently and they have not disappeared, but finished steel prices certainly are not engaged in declining at the present time. The strip market is quoted the same as formerly, but in the past few weeks a wider range of buyers has been getting the special or inside price. Nail makers intend to hold nails rigidly at $2.40 but have taken some forward business at the recent low prices.

HOLIDAY LULL IN OKLAHOMA MARKET

(Continued from Page 44)

an obvious disadvantage in securing outlets for their refineries. The spot market, as one refiner explains, is being more and more dominated by buyers who are interested only in securing the material at the lowest possible price. Many of this class of jobber buyers are price cutters in the retail market, centering their activities in securing the business of that class of consumers who are interested only in price in their gasoline sales.

The wide sale of Ethyl Gasoline and the large national and sectional advertising campaigns of major oil companies no doubt has aided in making the consumers more discriminating in their purchases of gasoline. The increasing sale of branded lubricating oils is a further reflection of this development.

In the refiner-jobber relationship it has widened the field for the licensed or authorized agreements. The jobber sells the trademark products of the refiner and is often aided by local advertising and sales campaigns. In this type of agreement the jobber naturally is not so much interested in the lowest tank car prices and the seller benefits from this angle of the contract.

Several of the larger companies have this type agreement in areas where they have a large number of their own company-owned bulk and service stations. The jobber or dealer buying either on a tank car or tank wagon basis sells in a section not covered by the refiners' own stations. Thus the refiner secures a heavy retail distribution within a limited area and the maximum benefit is obtained from any special sales or advertising effort.

Gasoline and Naphtha

A few refiners continue to quote 7¼ cents to the trade in spot sales to jobbers for U. S. Motor gasoline. At least two large refiners who have been quoting this price lowered their quotations last week. U. S. Motor gasoline sold as low as 6 and 6¼ cents on Monday and Tuesday the supply being available from several sources.

Although sales of 400 endpoint gasoline were reported as low as 6½ cents most of the refiners were asking from 6¾ to 7¼ cents. So far as could be learned most of the refiners were holding to the export prices of 7½ for 390 endpoint material and 7¾ cents for 375 endpoint in their domestic sales. A few sales one-eighth to one-fourth cent above these prices were reported.

Kerosene and Distillate

The range in kerosene and distillate prices is unchanged. Scattered buying has relieved a few refiners of excess kerosene and distillate. The demand for the low cold test furnace oil with a flash under 175° F. is active and sellers who have refused to lower their price under 4 cents are reporting more active demand. Good material which was available as low as 3½ cents a week ago has all been purchased.

Some 40-41 and 41-43 water white kerosene has sold as low as 4 cents but the bulk of the business is being placed at a price range of 4¼ and 4½ cents. Some of the trade expect the domestic demand for kerosene to improve early in January. A little export business was placed with North Texas refiners last week.

Fuel Oil and Gas Oil

Any high gravity fuel oil or gas oil which can be used as furnace oil material is in strong demand. Sales of 28-30 and 30-32 fuel oil of low flash and good color and odor sold as high as $1.25 per barrel last week. The lower gravity grades were also scarce and prices firm. A low cold test, straw color gas oil will bring 3⅛ and 3¼ cents in the Oklahoma market with many buyers. The low on any grade was 2⅞ cents.

Natural Gasoline

Although Grade A natural gasoline is lower in price than it was a week ago the product is hard to find. Grade AA is more plentiful at a price range of 6⅛ to 6¼ cents. On the remaining grades the prices ranged down to a flat price of 5½ cents for Grade C. Very little new business was reported on Monday and Tuesday.

Lubricants and Wax

There is nothing new in the lubricant and wax situation. There will be little trading in these products over the remainder of the year. Some buyers are predicting lower bright stock prices early in 1930 but this prediction is not supported by the sellers.

Late Fields

(Continued from Page 56)

to bring in another due to the necessity of completing offsets.

The seriousness of the situation at Santa Fe Springs and the absolute necessity of limiting production is generally recognized and practically all operators have decided to grin and bear it notwithstanding that each new completion will require a further substantial reduction in current production. Lease requirements and the unequal distribution of producing wells in the deep zone prevented operators from restricting drilling operations.

NORTH LOUISIANA-ARKANSAS

SHREVEPORT, La., Dec. 24.—Muslow Oil Co.'s No. 1 Peyton, Section 30-23-11, an old Carterville gas well deepened, blew in flowing 60 bbls. 40 gravity pipe line oil from 5 feet of sand, total depth 3,130 feet, the best results so far obtained in deepening played out gas wells in this area of northeastern Bossier, northwestern Webster Parish. Modisette and others' No. 2 Union Sawmill, Section 14-18-14, old Lawson-Urbana district of Union County, Arkansas, set liner at 2,238 feet, swabbed to top of liner and rises 500 to 600 feet in oil against bailer. Running sand pump and swabbing while standardizing. It looks like small wildcat producer. It is a half mile west of E. M. Jones' 7-bbl. producer.

OKLAHOMA

The production of the Oklahoma City Pool was 97,093 bbls. from 21 wells on the gauge of December 24, ending at 7 a. m.

The Indian Territory Illuminating Oil Co.'s No. 1 Thomas Fuzzell, SW cor. SE SE, Section 13-11-3w, Oklahoma's largest well, made 27,390 bbls., cutting 7 per cent on the gauge of December 24 at 7 a. m. Its initial production was 43,557 bbls. Tom Slick Oil Co.'s No. 2 Glidden, SE cor. SW SE, Section 13-11-3w, started cutting 2 per cent on the gauge of December 24. These wells which offset each other started cutting the same day.

Coline Oil Co.'s No. 3 Clauer, SE cor., Section 25-11-3w, was drilling plugs at a total depth of 6,448 feet. The 6-inch casing was landed at 6,339 feet.

E. L. Harris and others' No. 2 Harjoche, in Section 8-6-6, Seminole County, made 1,855 bbls. the first 24 hours, averaging 87 bbls. an hour from the Booch sand at 2,848-60 feet. It is the second well completed in the area.

E. L. Harris' No. 2 Harjoche, NE cor. SE SE, Section 8-6-6, made 430 bbls. in four hours ending December 23 at 7 a. m. It is producing from the Booch sand at 2,850-62 feet. It is the second well completed in the area by the same operators. These wells indicate a new pool may be opened in the area, southwest of the Little River Pool.

Wirt Franklin Petroleum Corp.'s No. 2 Lowery, SE cor. NW NW, Section 12-11-3w, in the north end of the Oklahoma City Pool, was drilled 10 feet deeper and increased its production from 5,500 bbls. daily to 10,881 bbls. in 19 hours. It was then shut in owing to lack of tankage.

Indian Territory Illuminating Oil Co.'s No. 1 Fortson, SE cor. NE, Section 24-11-3w, made 14,697 bbls. the first 22 hours. The well is producing from the Arbuckle lime at 6,047-6,525 feet. The 6-inch casing was landed at 6,026 feet.

A new wildcat location has been announced by the Superior Oil Corp. and others, west of Oklahoma City. It is in the SE Section 17-12-4w, Oklahoma County. Operators have been active in that area since last summer when it was core drilled. Four other locations were made on the west side of the Oklahoma City Pool Monday, December 23 by the Indian Territory Illuminating Oil Co. They are No. 2 Werner-Farley, SE cor. NE SE, Section 23-11-3w; No. 3 Werner-Farley, SW cor. NE SE, Section 23-11-3w; No. 1 E. Farley, SW cor. NW SW, Section 24-11-3w, and No. 1 Mary Warden, NW cor. NW SW, Section 24-11-3w.

Peerless Oil Producing Co.'s No. 1 Wentz, in Section 22-22-1, Noble County, made 45 bbls. of oil and 2 bailers of water an hour from the Layton sand at 3,282-86 feet. Owners believe the water may be coming from behind the casing and expect to drill the wildcat deeper. It is the fourth test in the township to have a showing of oil in this horizon. All these other tests were drilled to the Wilcox sand and found water.

Magnolia Petroleum Co.'s No. 1 Wagner, in Section 17-14-4, Lincoln County, made 205 bbls. of oil in 12 hours from the Simpson horizon at 5,065-75 feet. It is the second well completed in the area which was opened by the same company last summer.

SOUTHWEST TEXAS

FORT WORTH, Tex., Dec. 24.—Adams' No. 1 Lowe, 250 feet from northwest corner of Subdivision 19, Guadalupe County School Lands, Taylor County, Texas, 4 miles south of Dunnigan and Shell's discovery well, had lime from 2,383-84 feet and filled up 2,000 feet with oil. It had an estimated 500,000 feet of gas. It is shut down at 2,384 feet. It has the same pay horizon as the Dunnigan discovery well.

DEARBORN CHEMICAL CO. HAS NEW HEADQUARTERS

In connection with its occupation of new and bigger quarters at 1029 West Thirty-fifth Street, Chicago, the Dearborn Chemical Co. held a house-warming covering three days, December 16, 17 and 18. A dinner was served each of the three evenings, with about 140 guests present each time. Professors of science from Lewis Institute and Armour Institute of Technology, engineers of large industrial plants and the South Park Board of Commissioners were among those invited.

The company's new home occupies an entire floor and includes, besides the main laboratory, eight smaller private or classified laboratory rooms, a receiving room, storeroom, three offices and a library. The main laboratory is 50 by 100 feet. There are eight single working tables in the central part of the room in addition to those that line the walls. An enameled metal case for storing chemicals and glassware fills one-third of one of the long wall spaces. The tables devoted to the work of water analysis are covered with individual hoods, which are tied into a ventilating system.

The Dearborn Chemical Co., founded in 1887, recognized the necessity of chemical analysis of water used for making steam in order to corect troubles caused by salts and impurities. From small beginnings the company has grown to a world-wide organization employing hundreds of persons.

The laboratory staff devotes most of its time to water analysis and research. Expansion has been found necessary three times in 20 years. The new laboratories more than double the company's facilities.

In addition to its work with water, the company has turned its attention to lubrication, prevention of rusting of metal products, cleaning and other problems of the industries served. These have had the benefit of Dearborn laboratory investigation and research, and products in these lines have been developed.

The chief executives of the Dearborn Chemical Co. are: Robert F. Carr, president; George R. Carr, vice president and general manager; G. W. Spear, vice president and eastern manager; E. A. Converse, secretary; F. L. Baker, treasurer; J. W. Brashears, director of purchases and manufacturing; E. W. Converse, sales manager; E. K. French, chemical director.

MOVE GAS OFFICE

Due to the unusual expansion and growth of the natural gas industry in the Southwest and West, the natural gas department of the American Gas Association, with the approval of the department's executive committee, will close its Pittsburgh, Pa., office on January 1, and re-open in Dallas, Tex.

E. J. Stephany

E. J. Stephany, secretary of the natural gas department, will continue in charge of that division of the gas association's work at Dallas.

OPENS SOUTH AFRICAN BRANCH

The Sullivan Machinery Co., Chicago, has established a branch office in Johannesburg, South Africa, as "Sullivan Machinery Co., Africa (Proprietary), Ltd., Geneva House, Johannesburg, Transvaal." Charles C. Smith, formerly of the Sullivan staff but more recently manager for Barlow's Johannesburg (Proprietary), Ltd., Sullivan agents in South Africa, will be manager of the new office. Barlow's Johannesburg (Proprietary), Ltd., and Thomas Barlow & Sons (S.A.), Ltd., Durban, Natal, continues as Sullivan agents in their respective territories. A branch office, warehouse and service station for Sullivan equipment, and particularly for Sullivan Diamond core drills, has been established in N'Dola, Northern Rhodesia.

McKee World-wide Service to the Petroleum Industry

DURING the past twenty-five years we have Designed, Erected and Equipped plants for the Petroleum, Iron and Steel Industries in nearly every country on the globe. This work has taken us into Canada, England, France, Germany, Belgium, Russia, Roumania, Argentine, Japan, China and India; in addition to every industrial part of the United States.

Recent Foreign Installations

HAMBURG, GERMANY

A Complete Refinery with capacity of 6,000 barrels per day, erected and in operation in eight months.

PLOESTI, ROUMANIA

Two Pipe Still Distillation Units with a daily capacity of 7,000 barrels and 4,000 barrels.

COMPANA, ARGENTINE

Erection of Soaking Drums, weighing from 150 to 160 tons, and other heavy equipment.

TOKIO, JAPAN

A Complete Modern Refinery with capacity of 3,000 barrels per day. Designing now completed, ready for construction.

TO the Refining Division of the Petroleum Industry we offer a Complete Service, from a Preliminary Survey to an Operating Refinery; and this service is available wherever crude oil is processed.

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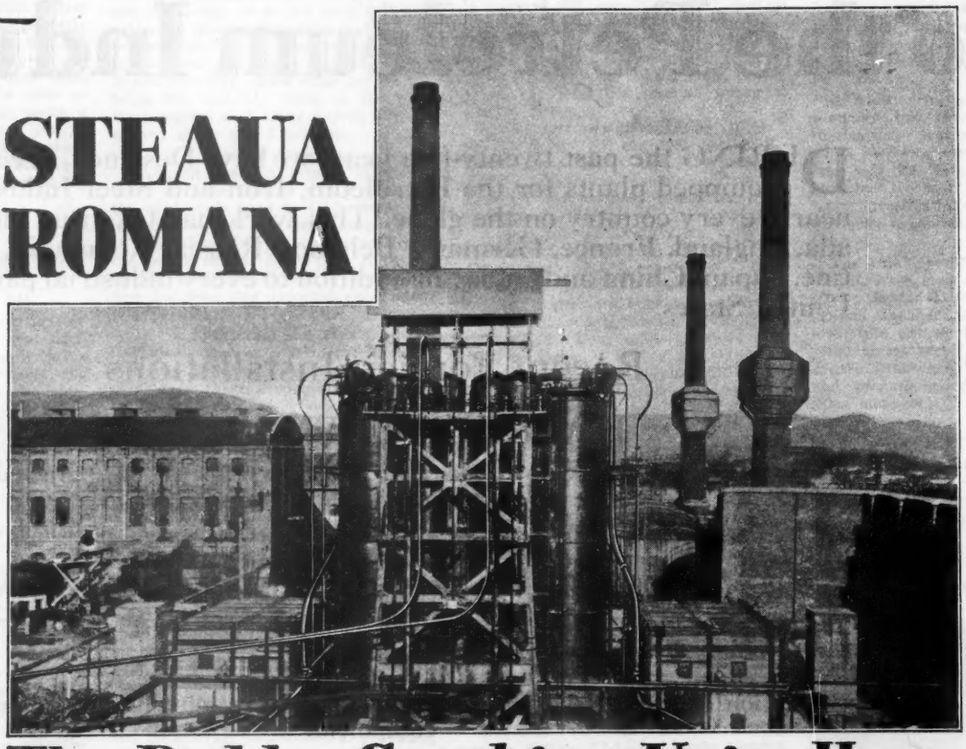
Principatele Unite No. 2
PLOESTI, ROUMANIA

at

STEAUA ROMANA



The Dubbs Cracking Units Have-

PIPING BY MIDWEST

STEAUA ROMANA of Campina, Roumania, is another name on the long list of refineries in this country and abroad that use Midwest Piping.

Midwest has long specialized in the fabrication of piping for the oil industry and is well acquainted with its piping needs. Well-equipped plants manned by experienced organizations at Passaic (N. J.), St. Louis and Los Angeles assure you prompt attention, intelligent interpretation of drawings and specifications, and fabrication in accordance with the most modern practices.

Midwest also erects piping of all kinds. In 1928, a contracting organization with more than 30 years' experience in piping erection was acquired.

Whenever you need piping . . . whether complete piping for a refinery or only a bend, coil or welded header . . . it will be to your advantage to get in touch with the Midwest office nearest you.

MIDWEST PIPING & SUPPLY CO., INC.

Offices: ST. LOUIS, 1450 S. Second St. . CHICAGO, 208 S. LaSalle St. . LOS ANGELES, 520 Anderson St.
TULSA, 805 Mayo Bldg. . NEW YORK (Ballwood Div.,) 30 Church St.

WELDLESS JARS

SPANG

The HIGHER STANDARD

USERS of Spang (patented) Weldless Jars never worry about jar trouble. There are no welded reins to fail. There have been no welding heats to weaken the material.

Each and every Spang Weldless Jar is drop forged from a single billet of especially tough alloy steel—then scientifically heat treated for maximum strength, service and safety.

Spang Weldless Jars are standard equipment in all fields, domestic and foreign.

Over 300 leading Supply stores carry Spang Weldless Jars in stock.

SPANG & COMPANY
Butler, Pa.

The Tubing Tong

With The Positive Lock!

The W-K-M Tubing Tong stays on the pipe always—without assistance or support from chain links or any hinged members, the action of its jaws being regulated by concealed spring tension.

But a special *break-out lock* on the side is frequently used by the boys as an additional safety precaution while the tong is being passed. This lock makes certain that the tong can't slide down the tubing when it is thrown into a swivelling motion. It increases the grip of the jaws, fastening them into place flush against the pipe. When the tong is thus locked, a 200-pound man can hang on the end of the handle as it is passed, having the full assurance that the tool will not slip, even under his weight.

Cannot Crush Pipe

The W-K-M Tubing Tong cannot crush the pipe no matter how tight the lock is shut. A bumper cast into one of the jaws performs several services. It protects the jaws from the jolt when the tong is stabbed on; it helps keep the bits flush against the pipe; and it limits the closure of the jaws themselves, preventing crushing but allowing enough grip to move the tubing without slipping.

Other Features—

The many advantages of the Tong are only understood completely when the tool is actually used. A number of the important features, however, can be perceived at once—lightness of weight, automatic jaw action, durable chrome-nickel steel construction, ease of handling, and instant, unfaltering application.

The Tong is stabbed onto the tubing, and it is ready for the heaviest pull. The releasing operation is just as quick and easy—a slight jerk of the hand, and it's off! No other tong on the market can boast so many attractive features.

W-K-M Tubing Tongs are made in
2-in., 2½-in., 3-in., 3½-in., 4-in., and 4½-in. sizes
Write for Pamphlet Number 420

SAFE!

—It can't fall off while the boys are passing it!

The W-K-M CO., *Inc.*

OIL FIELD-PIPE LINE & INDUSTRIAL EQUIPMENT

HOUSTON - TEXAS

EXPORT OFFICE: 74 TRINITY PLACE, NEW YORK, N. Y.

MANY DIFFICULTIES IN PATH OF DEVELOPMENT OF SAKHALIN FIELD

Translation by Dr. Ed Bloesch, Geologist, Tulsa

The U.S.S.R. publication, "La Vie Economique Des Soviets," printed and distributed from Paris, France, states in a recent issue that the petroleum deposits of the Island of Sakhalin are to be developed in a program that was started in 1928 and will extend through 1932.

This island, which is located north of Japan and east of the coast of Siberia, has three or four industries upon which its inhabitants depend for their existence. They are fishing and hunting of fur-bearing animals, lumbering, coal mining and the production of oil.

The country is covered with large forests of pine and hardwoods, and coal is found in many places. This coal is reported to be of very good grade, some of it equal to the English product, and is being mined to some extent, but cannot be transported away from the island except in small quantities.

Rich petroleum deposits are found in the Okha basin and it is estimated that this area will ultimately produce 16,400,000 tons (123,000,000 bbls.).

About October 10 the Japanese concessionaries report that they had struck oil at about 101 meters depth (331 feet), where an oil-bearing sand about 12 feet thick was encountered that is producing a heavy oil having 0.95 gravity. This strike extends the oil region and gives promise of this area being of considerable importance in the future.

South of Okha there is an anticline near Noutovo, which also seems to give promise of considerable production later as it is developed.

Important to Japan

This island, half of which is owned by the Japanese, is considered of importance to them because of its oil and coal deposits, as Japan does not have enough of those commodities to supply its requirements and in 1926 had a consumption of about 1,000,000 tons, of which 750,000 tons were imported, while 262,000 tons were from domestic oil fields.

The new ships that Japan is building are for the most part oil burners and they are therefore anxious to develop petroleum as close to their country as possible and have numerous concessions in the Soviet portion of Sakhalin.

It is estimated that by 1935 the Japanese concessions in Sakhalin will be producing 3,000,000 bbls. of oil, which will permit them to decrease their importations from the United States, Dutch East Indies and other countries and draw more freely upon this nearer supply.

The big task facing all operators in the Island of Sakhalin is the problem of transporting materials of all kinds, for all food, supplies and tools must be imported into the country, which is little populated especially in the eastern part where the oil deposits are located.

This area is described as one vast swampy forest extending down to the Sea of Okhotsk which is rough when not frozen. The winters are so severe and long that for 9 or 10 months each year it is impossible to reach the north coast of the island by boats and the ports, such as do exist there, are not accessible to sea-going crafts and all materials must be lightered to the shore.

It is about 12 miles from the deposits of Okha to the Bay of Ourki, but that body of water is not deep enough for large ships. To the west from these oil fields there is the Bay of Baikal, which is deep but very stormy. It is about 18 miles from Okha fields to Baikal and there is one 6-inch pipe line laid through this area, which is the only outlet for this oil at this time.

Plan Other Pipe Lines

It is planned to lay other gathering lines from the central deposit to connect with those to the north and south and this will make a system having a total length of about 50 miles when completed.

It is estimated that by 1935 there will be a total of 165 wells drilled in the oil fields of Sakhalin that will produce 7,500,000 bbls. of petroleum and it is planned to electrify these wells and utilize the natural gas that accompanies the oil for power purposes.

The main port of the island is located at Alexandrovsk and it is intended to extend a narrow gauge railway from that port to Okha Field, also to build a standard gauge line from Moskalvo to the Bay of Baikal which will permit the handling of supplies into the oil fields during the greater part of the year. Ice breakers can maintain open water in the sea outside of Alexandrovsk for 9 or 10 months each year, which is opposite to the condition on the north coast where all ports are closed except for the short summer season lasting from three to four months.

At present the mode of transportation is mostly by small boats which ply along the coast and into the lagoons and in the winter time these same routes are followed but the means of transportation is by sleds drawn by dogs or reindeers.

The only existing road from Okha to the village of Moskalvo is one traversed by reindeer teams and that passes through a swampy region and is closed part of the year because of the heavy snows.

The Soviet plans to establish telegraph communication with Sakhalin soon and also to use hydroplanes as a means of quick transportation, and during the winter months to change from pontoons to skis for these airships so that their period of usefulness each year will be as long as possible.

This region presents many conditions that make rapid expansion difficult for the extremely severe weather conditions existing over the greater part of the year, the distance from industrial centers, necessity of importing all foods and tools and the small population of natives who are unaccustomed to work such as required around oil fields.

The island is about the size of Denmark, but has a native population of only about 18,000 people in the northern or Soviet part, who belong to the Toungouses, Ghiliaks and Oratchenes tribes; while in the southern or Japanese section there are about 280,000 people. These conditions make it necessary to import skilled labor from European Russia, in as much as Siberia has none to spare.

These conditions will make developments in the petroleum industry on the Island of Sakhalin slow, but the Soviet has mapped out a very definite program to extend over a term of years and eventually these oil fields may produce considerable oil, but it is expected that it will be largely used by the Japanese and by the Soviet, so it will have little effect on the world's markets other than to release some oil that is now going to Japan.

RULING ON PERMITS TO SUPREME COURT

WASHINGTON, D. C., Dec. 23.—During the present session of the Supreme Court of the District of Columbia, cases will be considered involving the right of the Secretary of the Interior to deny to prospectors permits to prospect for oil on the public domain.

The first case will involve a writ of mandamus filed by Roy G. Barton which seeks to compel the secretary to issue a permit on the ground that a denial to issue one was the taking of property without the due process of law and that nothing in the general leasing act of 1920 authorizes a denial. The same question is raised in suits filed by Ethel M. McLennon and George G. Retherford and R. L. Paris. On the outcome will depend the validity of hundreds of applications for permits.

The policy of the department is to deny application for prospecting permits unless the applicant can show discovery or the expenditure of funds to establish an equity.

a real sand pump *it's the*

MILLER

The Miller can be used as either a sand pump or bailer. It will clean out faster due to the sand line running through the bail making it possible to use a 25 or 30-foot tube.

The Plunger is made 18 inches long with eight water courses permitting the fluid to seal the valve on top of the plunger, thus creating a greater suction than in any other pump made—then too, there is a type bottom for each particular job and with both the latch and set screw used in the Miller it is impossible to lose a bottom.

Built to stand the tough jobs, constructed of National Seamless Tubing and Sivyer Steel Castings, made throughout of steel and eliminates the use of leather washers. Made in 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9-inch sizes and 20, 25 and 30-foot lengths.

Send for fully descriptive circulars and prices, the Miller Sand Pump is sold through the leading supply stores or direct from the factory.

Star Bottom used for cutting the sand loose and preferred by some to the Chisel Bottom.

Bailer Bottom will speed up production in cavy holes by time saved in picking up cuttings.

Chisel Bottom will save the expense of running tools and its chisel shape prevents sticking in tightly packed sands.

Sand Pump Bottom illustrated in position in the pump.

Patented
March 1, 1921—No. 1370340
January 20, 1925—No. 1523604

MILLER

Combination Bailer & Pump Co.

General Offices and Plant
Sapulpa, Oklahoma

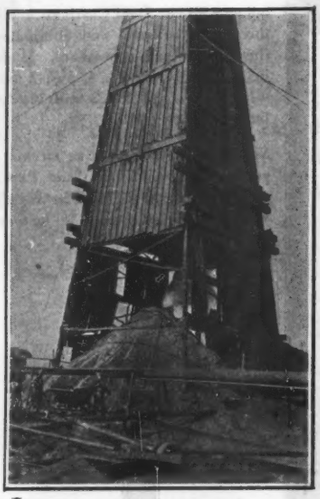
RUMANIA'S INDUSTRY SHOWING PROGRESS

(Continued from Page 142)

greatly exceed domestic needs, and the low export price in 1928 caused the refineries to operate practically at a loss. Several Rumanian refiners who intended to establish cracking plants were impeded by lack of capital.

Fuel Oil Principal Product

"An intervention with the Government with a view to reducing railroad freight rates on fuel oil brought no relief, while the railway transportation declined to consider the replacement of coal by oil residues for fuel, alleging technical difficulties. As in previous years, fuel oil (residues) was the principal petroleum product on the domestic market, accounting for more than 60 per cent of the Rumanian consumption of petroleum products. Notwithstanding the low price, however, the increase in internal consumption of fuel oil in 1928 over that of 1927 was small.



Derrick in Rumania.

"A more important gain was noted in gasoline consumption owing to the steady increase in the use of automotive vehicles in Rumania. The consumption of gas oil also increased in 1928 in comparison with 1927, but there was a marked decline in the consumption of kerosene, the main reliance of the rural population for lighting. The decline is attributed to the corn failure and the resultant decline in purchasing power of 80 per cent of the population.

"There was a distinct improvement in the spring of 1928 in the price of gasoline. Both export and domestic prices are regulated in Rumania primarily on world market prices. The unfavorable situation of the local oil industry in 1927 and at the beginning of 1928 was due to overproduction in America and the price war of world companies. The end of the price war brought a general improvement, although the subsequent drop in the price of fuel oil offset to a considerable extent the improved gasoline prices. Appreciable decreases in domestic prices (generally substantially above export quotations) were brought about also by the cancellation, December 1, of the sales agreement of the principal refiners.

Reducing Costs

"Any improvement in the Rumanian industry at the end of 1928 was principally attributable to the measures taken by the local companies at the beginning of the year toward reducing production costs. These included the introduction of modern drilling methods, notably increased employment of rotary drilling, and a reduced number of tube columns, economizing both time and expense. In addition, the prolonged crisis of 1927 compelled the companies in 1928 to effect economies in administration and to endeavor to amalgamate existing organizations, although only one merger actually was completed during the year.

Exports

"Exports continue to comprise the most important factor in the development of the Rumanian industry. Total shipments of oil products in 1928 amounted to 17,394,462 bbls., a 22 per cent increase over the 14,213,501 bbls. exported in the preceding year, and equivalent to 55 per cent of the crude production of the year. The 1928 exports were divided into 4,921,164 bbls. of gasoline, 5,116,982 of kerosene, 1,537,549 of gas oil, 5,356,368 of fuel oil, and 462,399 of lubricating oils. The gasoline and fuel oil exports represented large increases over the corresponding totals in 1927, while the other varieties showed only slight variation. Unfortunately, the financial returns did not correspond with the increase in quantities shipped, as the rise which occurred in gasoline prices toward the middle of the year was offset largely by the unprecedented fall in fuel oil quotations.

"Gasoline exportation was hampered by insufficient capacity of the state pipe lines. With a view to their reorganization and reconstruction, the Government solicited the participation of the leading oil companies in the establishment of an organization to commercialize the lines, but this plan remained unrealized on account of lack of funds. The construction of a gasoline pipe line from Baicoi to the port of Constanza also was discussed by the Government, and there seemed to be a prospect of its realization.

Countries of Destination

The leading countries of destination for Rumanian gasoline exports in 1928 were Germany, Austria, Great Britain, Hungary, France, Italy, and Czechoslovakia, in the order of their importance; for kerosene, Egypt, Italy, Great Britain, Hungary, Austria, Germany, and Yugoslavia; and for fuel oil, Italy, Great Britain, Spain Egypt, France, Yugoslavia and Hungary."

Old Rumanian well.

In summarizing the review, Consul Childs said: "With sufficient capital at its disposal the Rumanian oil industry should be in a position to keep pace with modern drilling, refining, and transportation, and to carry out a large scale rationalization program, which is considered to be an essential step toward the placing of the industry on a permanently sound foundation."

USE 1,900,000 BBLS. GASOLINE DAILY

(Continued from Page 138)

expected to show an increase of approximately 20 per cent over 1927, in Germany and France 15 per cent, Australia about 20 per cent and for Argentina and Italy about 10 per cent. From a study of all figures it would appear that the average annual consumption of gasoline for the world outside of the United States is increasing at the rate of 15 per cent per annum and this rate promises to be maintained or slightly increased during the next few years.

From Table B it is noted that the continents of North America and Europe consumed 94.28 per cent of the world's gasoline in 1927 and the same areas contained 94.55 per cent of the world's automobiles registered in that year. The coincidence of these two figures is interesting and points to automobile registrations in foreign countries as the best possible index or trends in gasoline consumption.

While there seems to be a close relationship between the percentages of automobile registrations and gasoline consumption by geographical areas, the annual increase in gasoline consumption does not seem so directly related to increased automotive registration since for instance the world automotive registration for 1927 showed an increase over 1926 of approximately 12.2 per cent and that for 1928 only 7.0 per cent. In the former case the actual increase in number of cars (thousands) registered was 3,005,000 and in the latter 2,093,000.

The foreign market for automobiles, identical with that for gasoline, covers 7½ times as much area as the United States, contains 12½ times as many inhabitants and at present absorbs approximately 1,200,000 automobiles a year, about one-half of which are supplied by the United States.

The mathematical average retail price of gasoline in foreign countries in 1928 according to the records of the Bureau of Foreign and Domestic Commerce is in the neighborhood of 36 cents per U. S. gallon while the average export value according to the same source was slightly over 10 cents per gallon.

In France the import duty is approximately 12 cents per gallon to which a number of additional taxes may be added giving at least 15 cents per gallon revenue on each gallon of gasoline to the French government. In 1928 we exported 7,726,261 bbls. of gasoline to France hence we must have added, in direct form alone, in excess of $50,000,000 to the treasury of the French Republic in providing this taxable gasoline.

England now has a tax which is the equivalent of 7 cents per American gallon on imported gasoline. Since they imported in excess of 626,000,000 gallons of gasoline from the United States in 1928 this in turn must have contributed over $43,000,000 to the British treasury.

It is apparent that the average import duties and taxes on gasoline in all foreign countries averages in excess of 8 cents per gallon. On this basis our ex-

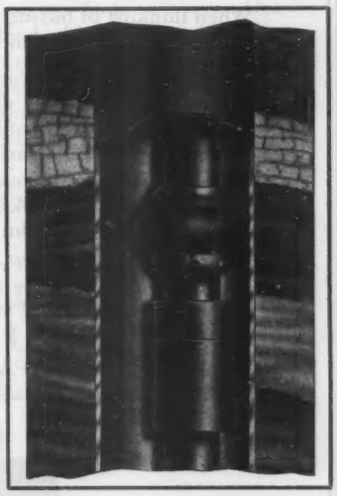
ROMANO-AMERICAN REFINERY AT TELEAJEN, RUMANIA

Modern Drilling Conditions Demand

National

"Barrel-Type"

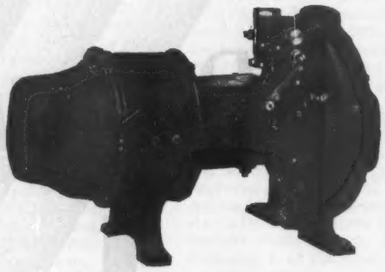
Casing Protectors!



Modern Drilling Conditions demand efficient products . . . products that will give long wearing life, continuously satisfactory service, and meet all drilling requirements demanded of them . . . NATIONAL "Barrel-Type" CASING PROTECTORS have been made to fulfill these requirements . . . . for, National Protectors represent the *Minimum of Friction* between drill pipe and casing! . . . When these "Barrel-Type" protectors are installed onto a string of drill pipe the "Rub that Ruins" (steel against steel) can be forgotten, for these protectors *stay where they are put,* are made of the best rubber obtainable for the purpose and *will not loose-off in the hole.*

Note the construction of the National "Barrel-Type" Protector rubber . . . Readily you can see that there is but little friction . . . no square edges to hang on collars or jagged pipe . . . The smooth, well-rounded forms of the protectors will at all times reduce the wear of drill pipe against casing to a minimum . . . There is not a better protector made than the National! . . . Give them a trial and they will sell themselves.

National
TOOL & METALS, INC.
P. O. BOX 818, TORRANCE 660
TORRANCE, CALIFORNIA



MOON Turbo Generators
1, 1½, 2, 3 and 4 KW

Wherever You Find Oil..

you'll find MOON Generators on the job.

NO matter into what oil fields you go, from one end of this country to the other, and in practically all the foreign fields as well—where derricks are lighted with portable lighting plants, you will find a vast predominance of MOON Turbo Generators.

As to WHY this condition exists, we refer you to the various producers and drilling contractors. When thinking of buying a lighting plant, why contemplate? The question should be easy.

Simple, rugged construction which guards you against shut-downs and delays; a simple, effective oiling system which results in long life and smooth operation; full ball-bearing construction throughout; fully enclosed—these are the features which have combined to make "MOON" synonymous with "Oil Country Lighting" for over 20 years.

Let us help you. Write for our folder of bulletins describing the various types of MOON Lighting Plants.

THE MOON MANUFACTURING COMPANY
108-128 No. Jefferson St., CHICAGO

MOON Gas-Electric Lighting Plants
1 to 7½ KW

The Moon Mfg. Co.
108-128 N. JEFFERSON ST
CHICAGO

The new 1930 MOON Pocket Calendars are ready. Write for yours.

ports of over 53,000,000 barrels of gasoline in 1928 must have provided a revenue of close to $200,000,000 to the various foreign treasuries during that year. In most cases this money goes into the general account and only a minute portion or its equivalent is spent on highways and roads.

TABLE B

	Gasoline consumption 1927 in bbls. (Thousands)	Percentage of world consumption gasoline	Crude oil production 1927 bbls. (Thousands)	Percentage world crude oil production	Automobile registration	Percentage world automobile registration
North America	308,580	79.82	965,727	76.58	24,273,427	82.52
Central America	173	.04	.....	....	11,240	.03
West Indies	1,503	.37	5,715	.43	64,466	.22
South America	6,102	1.57	97,438	7.73	495,595	1.69
Europe	55,956	14.46	110,105	8.73	3,540,183	12.03
Africa	2,937	.74	1,269	.10	190,385	.65
Asia	4,927	1.40	80,819	6.41	280,128	.96
Australia and New Zeland	6,233	1.60	.....	....	557,736	1.90
Total	386,411	100.00	1,261,073	99.98*	29,412,160	100.00

*.02 per cent for miscellaneous countries too small for individual mention.

AERONAUTICAL DEVELOPMENTS ABROAD FOR 1929

(Continued from Page 151)

that such an engine has been constructed by the Ministry of Air. It is said that production will not begin at once since further refinements and improvements are expected as the result of additional researches.

Weight has been reduced to 4½ pounds per horsepower. The new engine is reported to consist of nine cylinders and a principal feature is the injection of fuel by secret process, which is the subject of a special patent.

In summing up, two distinct tendencies are noted: Most research today in the United States and abroad is directed along the lines of economic and practical utilization of principles already long known; second, this tendency is paralleled by an ever-increasing diversification of services and extension of airlines to all points of the world, including those which just a short time ago were regarded as either hopelessly inaccessible or economically unable to support such a service.

In the strictly technical phase, little development is promised that should cause changes in research development work on the part of the petroleum industry.

TABLE B

Regular service, miles flown, A; passengers carried, B; mail carried, pounds, C; baggage and goods carried, pounds, D.

	A	B	C	D
1928—Australia (first six months)	641,831	23,896	3,465	59,504
1927—Australia	944,644	28,962	7,550	134,205
1928—Austria	383,002	5,477	15,234	214,587
1927—Belgium	73,492	[1]1,543	[1]811	[1]39,705
1927—Belgian Congo	124,350	735	.....	[2]124,822
1928—Bolivia	83,840	2,963	10,392	118,279
1928—Canada	[3]2,724,414	[3]74,689	[3]316,631	[3]2,404,682
1927—Colombia	327,645	2,667	79,565	450,848
1928—Czechoslovakia	605,314	[4]10,965	[4]34,110	[4]357,035
1928—Denmark	122,215	1,602	13,009	76,378
1928—Finland	121,210	3,201	22,183	82,348
1927—France	3,753,133	[4]21,000	[4]1,607,280	[4]2,755,000
1928—Germany	7,030,565	115,000	1,130,000	4,282,000
1927—Great Britain	873,297	19,935	120,962	1,197,582
1927—Hungary	133,348	2,293	52,095	57,156
1928—Italy	1,236,913[6]	[4]15,590	.....	[4]549,025
1927—Japan	545,381	[4]270	[5]119	.....
1928—Mexico	[6]489,679	5,089	61,625	46,704
1928—Netherlands	1,007,920	17,165	128,600	1,517,051
1927—Persia	119,853	2,800	1,653	82,884
1928—Peru	135,890	517	[4]9,000	[4]15,000
1928—Poland	830,175	[4]6,585	[4]71,643	[4]476,752
1927—Russia	1,128,948	7,079	.....	[2]375,622
1927—Spain	[7]73,082	[8]1,027	.....	[2]25,617
1928—Sweden	208,729	14,948	34,603	198,758
1928—Switzerland	330,496	14,283	97,664	244,929
1928—United States	10,673,450	49,713	4,061,210	1,847,836

[1]Traffic counted by stage; [2]includes mail service; [3]includes traffic flying clubs, Ontario Provincial Service and all commercial operators; [4]for two of five lines in 1927; [5]for 1926; [6]includes 3,484 passengers and 10,571 pounds of goods carried in taxi service; [7]figures for one of three lines; [8]for first half of 1927 and one of two lines.

TO WIN CONFIDENCE OF GAS CONSUMERS

(Continued from Page 93)

fact that those who are dealing with the public's complaints are not handling this work as it should be. Consequently, it is obvious that those who are employed to listen to complaints and adjust them, if possible, should be selected with unusual care.

Another way to create greater confidence is to let the people know frankly and regularly what you are doing to give them dependable service. While continued reliable service is fundamentally important in creating confidence on the part of the public toward utilities and while satisfactory personal contacts can do a lot of good, these are not sufficient to create the greatest good will toward the utility. The public must be told what the utility is doing to accomplish the desired end, namely, dependable service.

We have endeavored to tell the people (through our advertising campaign) what we had done, were doing or intended to do in the immediate future to insure an adequate gas service for the people of the border cities. The article covered the efforts which were being put forth by us to develop greater gas supplies in the field as well as the greater facilities we were installing to provide for better transmission of gas from the field and to better distribute the gas to our customers. We also told them of the storage which we were providing for an emergency and recently we have told them about the still further storage which we are providing by the completion of a new gas holder. We are now in the midst of telling our customers of what our new standby manufacturing plant means to their future gas requirements.

We know from actual observation and from our customers direct that these articles have had a lot to do with creating public confidence in our ability to serve them satisfactorily.

Most of the serious fires and blowouts occur during actual drilling operations, or while drill pipe is in use, when the drilling valve cannot be operated. Unexpected pressures encountered while drilling is in progress can be controlled with the Shaffer Cellar Control Gate in the same manner that a shut-off is obtained in open hole with the ordinary type of valve now in use.

With this control gate installed in the cellar, a shut-off can be made while the well is flowing, in a much simpler manner than by attempting to place packing in the regular type of blow-out preventer when the well is out of control.

Two of these gates are recommended for a safety set-up, one to close around drill pipe, and one to function as a drilling valve, closing open hole. The design is so compact that two of them occupy practically the same space as an ordinary drilling valve.

The control of high pressures while drilling or producing is our zone of endeavor, and we have staked our claim in all the high pressure fields of the world. Engineers everywhere show their confidence in *Shaffer Equipment*, and for modern deep holes, heavy casing strings and extreme pressures, they are demanding Shaffer products.

Photo shows five-thousand-pound cellar set-up for Kettleman Hills. The assembly is 100% Shaffer design and manufacture, and consists of high-pressure mud-cross, flanged to casing, a Control Gate with complete shut-off rams, (replacing old style drilling valve) then a Control Gate to close round drill pipe—and for additional protection and convenience, our famous Warren Control Head which is the safest blowout preventer of the packing-assembly type made, with a built-in overflow connection and flanged Christmas-tree cap.

PERFECT CONTROL

WITH SHAFFER HIGH-PRESSURE CELLAR GATES AND BLOWOUT PREVENTERS

COMPACT AND SAFE

TESTED TO 5000 POUNDS

SHAFFER TOOL WORKS

Brea, California

The Glands are Water Sealed

NO annoyance from escaping steam, no packing to replace—this is one of the many features that make Westinghouse Mechanical Drive Turbines universally popular.

Another feature is the center support of the turbine casing which assures perfect shaft alignment under all operating temperatures.

Westinghouse Mechanical Drive Turbines are built in capacities 5 to 1500 hp. They can be arranged either for direct connection or driving through Westinghouse Helical Reduction Gears.

Westinghouse power plant equipment includes—

Stokers For Every Coal Burning Requirement
Turbines
Surface Condensers and Auxiliaries
Air Ejectors
Generators
Jet and Barometric Condensers
Reduction Gears
Head Lighters
Generator Air Coolers

Westinghouse Electric & Manufacturing Company
South Philadelphia Works Philadelphia, Pa.
Sales Offices in All Principal Cities of the United States and Foreign Countries

Westinghouse

X98704

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

(Continued from Page 58)

GRANT COUNTY

Gypsy Oil Co.'s No. 1 Belderbeck, C SE SE Sec. 27-28-7w. Drlg. 4,954 ft.
Bailey's No. 1 Stover, C SW SE Sec. 20-27-5w ..... Rig on ground.
Baucher et al's No. 1 Deadman, SW SE Sec. 12-28-4w.. Drlg. 4,570 ft.
Cowden and others' No. 2 Vollmer, CEL NE SW Sec. 22-25-4w ..... Shut down 5,640 ft.
Otstot's No. 1 Tabor, C NE NE SE Sec. 23-26-3w ..... Drlg. 2,580 ft.

GARVIN COUNTY

Pickham-Harris' No. 1 Community Gaines, C NW NE Sec. 11-4-1 ..... Location.

GREER COUNTY

Helmerick & Payne's No. 1 Henck, NW cor. Sec. 23-6-24w. Fishing 2,205 ft.
I. T. I. O. and others' No. 1 fee, C SW NE Sec. 17-6-24w ..... Straightreaming 1,902 ft.

HARMON COUNTY

S. M. Stauffer's No. 1 Castleman, SW NE Sec. 8-4-26w.. Shut down 625 ft.

HARPER COUNTY

Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w ..... Fishing 6,161 ft.

HASKELL COUNTY

Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e ..... Drlg. 1,480 ft.
Marion Oil's No. 1 Sanders, NW NE SW Sec. 10-9-18e.. Shut down 2,387 ft.
Sanboise Gas' No. 1 Unknown, SW NW SE Sec. 32-9-21e.. Shut down 2,100 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11 ..... Rig.
Canady et al's No. 1 Kanard, NW SW Sec. 29-9-12 ..... Cleaning out 1,635 ft.
Irwin et al's No. 1 Jones, SE NW Sec. 30-5-10 ..... Rig on ground.

JACKSON COUNTY

Altus Oil Co.'s No. 1 Northington, NE cor. NE Sec. 4-1-20w ..... Shut down 2,020 ft.

KINGFISHER COUNTY

Superior Oil Co.'s No. 1 Story, SE cor. Sec. 25-19-5w .... Fishing 6,285 ft.
Galt Brown's No. 1 Wolf, NW SE Sec. 6-16-7w ..... Shut down 6,015 ft.

KIOWA COUNTY

J. D. Flannery's No. 1 Renave, SW cor. Sec. 25-6-18w ... Drlg. 1,006 ft.
Hyde et al's No. 1 Jones, SE cor. Sec. 23-3-18w-5o ..... Shut down 490 ft.
Merrick Oil Co.'s No. 1 Kelly, NW cor. SE Sec. 20-7-17w.. Shut down 1,165 ft.

LEFORE COUNTY

Red Bank Oil Co.'s No. 1 fee, SE SW NW Sec. 23-9-24.. Fishing 5,400 ft.; 15,000,000 ft. gas.

LATTIMER COUNTY

Limestone O. & G. Co.'s No. 1 Shaw, NW cor. NE NW Sec. 23-5-18e ..... Shut down 1,450 ft.
Limestone Oil & Gas Co.'s No. 1 McMurray, SW cor. SW Sec. 15-5-18 ..... Total depth 4,020 ft.; plug back to 2,550 ft.

LINCOLN COUNTY

Morgan & Flynn's No. 1 Johnson, SW NE Sec. 1-16-5 .... Wilcox sand 4,002-12 ft.; water; abandoned.
Phillips Pet. Co.'s No. 1 Stephens, SE cor. NW Sec. 29-12-3 ..... Drlg. 5,443 ft.

LOGAN COUNTY

Currier's No. 1 Young, C SW NE SW Sec. 34-17-4w .... Rig.
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w.. Shut down 3,970 ft.

McCLAIN COUNTY

Homaokla Oil Co.'s No. 1 Newsome, SE NE NE Sec. 16-5-3 ..... Drlg. 3,582-97 ft.; total depth 3,605-85 ft.; pumping 90 bbls.

McINTOSH COUNTY

Jennings Bros.' No. 1 Crabtree, NW SW NE Sec. 31-10-14 ..... Drlg. 3,000 ft.
Patterson and others' No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Shot 240 qts. 5,446-5,559 ft.; shot went off up hole; fishing.

MUSKOGEE COUNTY

Sessions' No. 1 Richard, SE cor. SW Sec. 29-13-19 ..... Drlg. 1,050 ft.
Mid-Western Oil Co.'s No. 1 Unknown, C NW SW Sec. 31-12-19 ..... Location.
Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .... Shut down 1,011 ft.
Cooper-Badget's No. 1 Young, NW NE NE Sec. 7-12-20e .. Shut down 50 ft.

NOBLE COUNTY

Peerless et al's No. 1 Wentz, NW SW Sec. 22-22-1 ..... Drlg. 3,279-82 ft.; 1,600 ft. oil in hole.

OKFUSKEE COUNTY

Henry Oil Co.'s No. 1 Harjo, Sec. 36-12-9 ..... Shut down 2,795 ft.
E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10 .. Drlg. 3,661 ft.

OKLAHOMA COUNTY

Magnolia and Ramsey's No. 1 Johnson, C NE SW Sec. 36-13-3w ..... Drlg. 2,150 ft.
Ryan & Martin's No. 1 Lawton, NE NW Sec. 3-11-2w .. Drlg. 3,600 ft.
Tom Slick Oil Co.'s No. 1 Martin, C NW NW Sec. 13-13-1w ..... Drlg. 6,655 ft.
Hall & Briscoe's No. 1 Holmes, NE cor. SW SE Sec. 10-11-3w ..... Fishing 4,750 ft.

PITTSBURG COUNTY

Mid-Western Oil Co.'s No. 1 Unknown, SE SW NE Sec. 11-7-18 ..... Drlg. 1,675 ft.
Empire O. & R. Co.'s No. 1 Williams, C NE SE Sec. 33-7-16e ..... Fishing 3,120 ft.
Kerr & Koy's No. 1 Hall, C NW NW Sec. 32-4-12 ..... Drlg. 3,300 ft.

PONTOTOC COUNTY

Indian Territory Illuminating Oil Co.'s No. 1 McFarland, NW cor. Sec. 4-5-5 ..... Wilcox 3,142-45 ft.; drlg. plug; water showing; plugged back to 2,700 ft.; ripped pipe 2,211-16 ft.; show oil; abandoned.
Independent and Shaffer's No. 1 Moses, NE SE SW Sec. 10-5-4 ..... Wilcox 3,332-41 ft.; show water; plugging back.

POTTAWATOMIE COUNTY

Keister & Manning's No. 1 Rowlett, SW SE NE Sec. 30-8-4 ..... Drlg. 1,030 ft.
Payne Drlg. Co.'s No. 1 Bullock, SE NE Sec. 22-6-3 .... Drlg. 3,380 ft.
Twin State's No. 1 Ray, NW SW Sec. 3-8-4 ..... Drlg. 4,150 ft.; rigging up standard tools.
Prairie O. & G. Co.'s No. 1 Bodkin, SW cor. Sec. 26-8-4 .. Drlg. 3,870-3,990 ft.; swabbed 110 bbls.; total depth 4,090 ft.

ROGER MILLS COUNTY

Bucy & Stone's No. 1 Williams, C SW Sec. 23-12-24w .... Rig.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Shut down 1,800 ft.

SEMINOLE COUNTY

Magnolia's No. 1 Webster, NE SE NW Sec. 31-6-8 ..... Rig.
Prairie's No. 1 Mingo, SE NE Section 25-6-5 ..... Drlg. 3,865 ft.
Prairie O. & G. Co.'s No. 1 Harjo, NE SW NE Sec. 25-6-7 ..... Drlg. 3,445 ft.
Sunray Oil Co.'s No. 1 Sunday, NW SE Sec. 25-5-5 ..... Location.

SEQUOYAH COUNTY

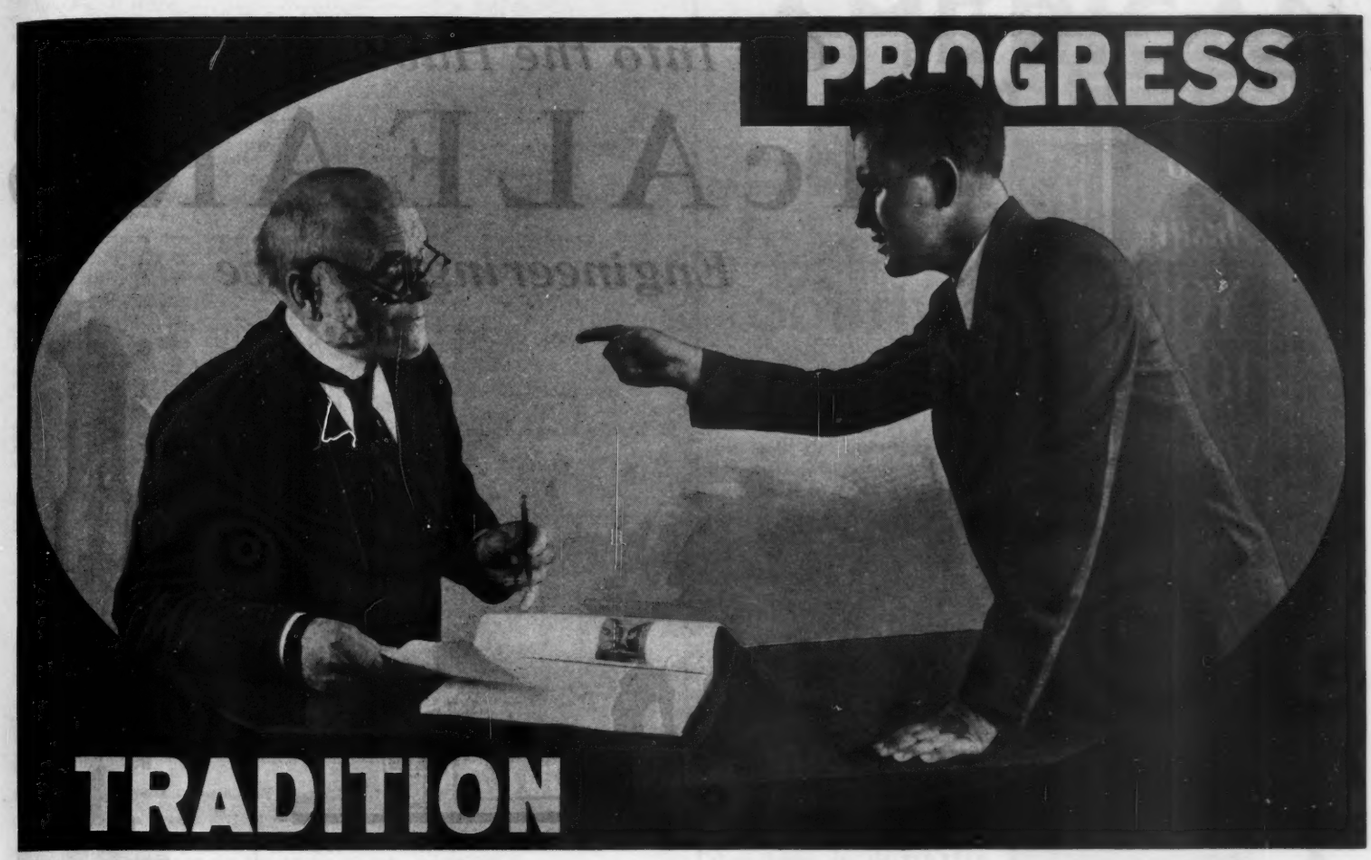
Hunt and others' No. 1 Unknown, SE cor. NW SW Sec. 12-12-22 ..... Shut down 1,260 ft.
Buffington and others' No. 1 Melcher, C SW NW Sec. 31-12-24 ..... Shut down 3,000 ft.

WOODS COUNTY

Peerless O. & G. Co.'s No. 1 Unknown, C NW NE Sec. 23-28-16w ..... Shut down 1,500 ft.
S. K. Miller's No. 1 Copenhavers, NW cor. NW Sec. 18-24-13w ..... Rigged up and shut down.
Gypsy-Prairie and others' No. 1 Thompson, SE cor. SW Sec. 10-25-15w ..... Drlg. 6,033 ft.
Sinclair Oil & Gas Co.'s No. 1 Showwalter, C SW SW Sec. 33-27-16w ..... Drlg. 5,835 ft.

WOODWARD COUNTY

Farrond et al's No. 1 Unknown, SE cor. SW SE Sec. 2-23-17w ..... Shut down 1,387 ft.



"Here, Lad—

You've been talking a lot about the Lincoln 'Stable-Arc' welder.

Pipe line welding has got to such an important point today that we've got to forget names and affiliations and use a welder that is head and shoulders above any other welder."

The Lincoln "Stable-Arc" Welder

—welds easier
—makes better welds
—permits greater output

because of the steady uniform arc throughout entire welding range, which is the result of:

Variable voltage design
Laminated magnetic circuit
Separately-excited generator field
Double control of welding heat
All steel construction

No other welder has all these features.

"Fine, Pop—

that's the 'Stable-Arc', only it's more than head and shoulders. It's also hands and feet ahead.

The improved model is HANDS ahead because with its unified centralized and simplified control with everything in easy reach of the operator—he uses his hands chiefly for welding.

It's FEET ahead because at the end of the day an operator has far more feet of welding to his credit.

I was reading where a pipe line contractor made on a 10-inch line an average of 22 joints per operator per day with the Lincoln 'Stable-Arc' welders. Even this speed can be knocked into a cocked hat with the new Lincoln 'Fleet-Weld' electrode. But even when you consider the 'Stable-Arc' welder alone and the fact that all its controls are mounted together under cover and are fool-proof—well, you've got to think of a new measure of its betterment.

I see in the paper where a New York physicist claims that no two objects in the universe can be more than 54,000,000,000,000,000,000 miles apart—which shows that he's never attempted to measure just how far the Lincoln is ahead."

The Lincoln Electric Co., Dept. No. 26-12, Cleveland, O.

"Stable-Arc"

LINCOLN WELDER

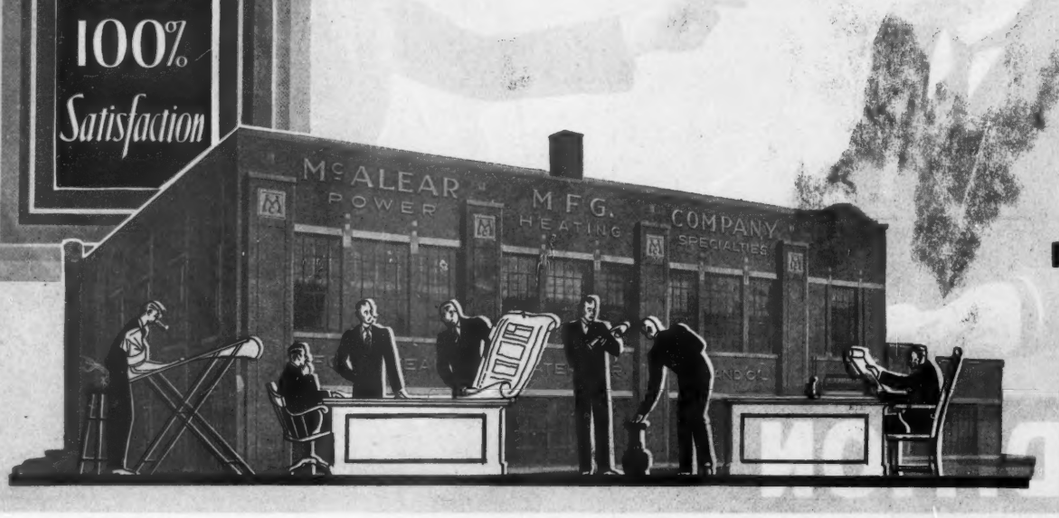
W-121

Get Into the Habit of Using

McALEAR'S

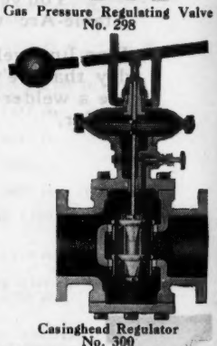
Engineering Service

To *Insure* YOU 100% *Satisfaction*



Pump Governor
No. 425

Gas Pressure Regulating Valve
No. 298



Casinghead Regulator
No. 300

Liquid Level Controller
No. 804

To protect you against any misuse—to assure you the correct equipment for all conditions—to help you solve your pressure and control problems, McAlear have an engineering service that you are urged to use. These engineers, with over 25 years of field training in the special uses of pressure and liquid level controls, have practical, sound experience to offer and are fully capable and willing to give their engineering advice on any installation.

This engineering service is maintained solely for your benefit. There are no strings tied to it—no obligations—no charge. Just use it freely.

Be sure to send for our new Sectional Catalog—the most complete text book on control equipment ever published.

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McALEAR

Prairie Oil & Gas and others' No. 1 Wilber, NE cor. NW Sec. 22-23-17w ..... Drlg. 5,916 ft.
Billy's Oil Co.'s No. 1 Watt, C SE Sec. 9-23-26w ..... Drlg. 4,968 ft.
Burgoyne Bros.' No. 1 Merkins, SW cor. SE NE Sec. 15-21-19w ..... Shut down 1,910 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

J. W. Ernest and Bryant's No. 1 Unknown, NW cor. Sec. 6-1-14 ..... Drlg. 800 ft.
Bryant-Croxton's No. 1 Mason, NW NE NW Sec. 4-1s-14. Drlg. 800 ft.
Bookshire's No. 1 Guinn, NW cor. Sec. 18-3s-10 ..... Shut down 100 ft.

BRYAN COUNTY

Marshall's No. 2 fee, C SW SE NW Sec. 26-5s-7 ..... Shut down; 6-in. csg. 265 ft.
Yale Oil Syndicate's No. 1 Craige, C NW NE Sec. 26-9s-9e ..... Drlg. 1,960 ft.

CARTER COUNTY

Campen-Lasater Co.'s No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 ..... Drlg. 1,920 ft.

CHOCTAW COUNTY

Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-19e ..... Shut down 1,346 ft.

COTTON COUNTY

Wirt Franklin's No. 1 Bandy, NW cor. Sec. 4-4s-10w .... Abandoned 3,419 ft.

JOHNSTON COUNTY

Smith & Knisely's No. 1 Lane, E half Sec. 29-1s-7..... Shut down 2,254 ft.

McCURTAIN COUNTY

Utopia Pet. Co.'s No. 1 Unknown, SE NW Sec. 14-9s-25.. Location.
Milton et al's No. 1 Vase, SW NW Sec. 26-6s-21 ..... Shut down 1,490 ft.

STEPHENS COUNTY

Smythe et al's No. 1 Johnson, NE cor. Sec. 30-2-8w .... Shut down 25 ft.
Porter & Monahan's No. 1 Robberson, SE NW Sec. 23-3s-4w ..... Dry and abandoned 3,513 ft.

TILLMAN COUNTY

Allen Bros.' No. 1 Howell, SW NE Sec. 13-1-17w ..... Shut down 610 ft.
Staley-Chenault's No. 1 Crane, NE SE Sec. 25-4s-14w .. Dry and abandoned 2,320 ft.
Nance et al's No. 1 Massie, NE NW Sec. 36-1S-6w .... Location.
Landfair and others' No. 1 Smith, SE SW SE Sec. 6-2s-16w ..... Shut down 2,535 ft.

OKLAHOMA PANHANDLE

Skaer's No. 1 Hitch, NW cor. Sec. 25-1-15e ..... Shut down 250 ft.

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

(Continued from Page 60)

CLAY COUNTY

Chrisler et al's No. 1 Tivier, SW cor. Sec. 19-8-3 ..... Shut down 50 ft.
Derby Oil Co.'s No. 1 Meimueller, C NW SW Sec. 9-10-3e.. Shut down 3,045 ft.
Skow Bros.' No. 1 Strud, SW SE Sec. 16-9-4 ..... Shut down 2,510 ft.

COWLEY COUNTY

Edenfield & Fair's No. 1 Wallace, CWL NE Sec. 17-34-4.. Shut down 365-75 ft.; 2,000,000 ft. gas.
Fine et al's No. 1 Brown, SE cor. Sec. 8-32-4 ..... Drlg. 310 ft.
Prairie's No. 1 Leighty No. 1 Ball, SW SE Sec. 4-30-5.... Drlg. 2,040 ft.
Milton & Mead's No. 1 Tatum, SE cor. SW Sec. 11-31-6.. Drlg. 1,920 ft.
Roth & Farrout's No. 1 Thompson, NE SE Sec. 31-31-3.. Drlg. 1,975-78 ft.; 1,000 ft. oil in hole in 12 hrs.
Shawver et al's No. 1 Oldham, NW SE Sec. 23-32-3 .... Drlg. 3,455 ft.

COFFEY COUNTY

Cross et al's No. 1 Fessen, SW NE Sec. 33-22-14 ..... Drlg. 860 ft.

DICKINSON COUNTY

Cress' No. 1 Sanden, NE cor. Sec. 12-16-2 ..... Rig on ground.
Prairie's No. 1 Lachard, C NW SW NE Sec. 12-16-2 .... Drlg. 800 ft.
Hiatt & Durham's No. 1 Wendt, NW cor. Sec. 17-16-2 .. Spudding.
Kruger et al's No. 1 Diche, C NW NE NE Sec. 17-13-4 ..... Shut down 2,095 ft.

DOUGLAS COUNTY

Jenkins & Scott's No. 1 Haden, SE NW Sec. 10-12-17 .... Shut down 550 ft.

EDWARDS COUNTY

Skelly's No. 1 Johnson, NE SW Sec. 21-26-17w ..... Drlg. 2,450 ft.
Barnsdall Oil's No. 1 McCarty, NW NE Sec. 31-25-17w.. Drlg. 1,325 ft.
Dixie & Amerada's No. 1 McCarty, SW cor. Sec. 22-25-17w ..... Drlg. 1,700 ft.

ELK COUNTY

Empire and Arkansas Fuel's No. 1 Record, C NW NE SE Section 32-30-10 ..... Drlg. 1,270-97 ft.; 5-bbl. showing.

ELLIS COUNTY

Streeter & Stearns' No. 1 Leiker, SW NE Sec. 26-13-20w. Shut down 1,290 ft.
Byrene et al's No. 1 Fisher, NW SE Sec. 4-11-20w .... Shut down 1,000 ft.
Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w ..... Fishing 2,556 ft.

ELLSWORTH COUNTY

Tatlock et al's No. 1 Sackem, C SW SE Sec. 25-17-9w .. Shut down 675 ft.
The Texas Company's No. 1 Sherman, NE SW Sec. 16-17-6w ..... Shut down 4,042 ft.

FORD COUNTY

McNabb et al's No. 1 Unknown, C SE Sec. 36-27-23w.... Shut down 400 ft.
Swain et al's No. 1 Kenthorne, C NW Sec. 21-25-24w .. Shut down 390 ft.

GRAHAM COUNTY

Gulf Coast Oil Co.'s No. 1 Johnson, C S half Sec. 27-8-25w ..... Shut down 4,231-45 ft.; water.
Naylor et al's No. 1 St. John, NW SE SE Sec. 27-8-25w.. Rig.

GREENWOOD COUNTY

Ward & McGinnis' No. 1 Henley, SW NE Sec. 23-25-9 .. Rig.
F. Konkay et al's No. 1 Rock, NW NE NE Sec. 7-27-12 .. Drlg. 280 ft.

HARPER COUNTY

Boeler et al's No. 1 Bear, C NE Sec. 21-31-6w ..... Shut down 440 ft.

HARVEY COUNTY

Walton Oil Co.'s No. 1 Neiman, C NE SE Sec. 13-24-2 .. Abandoned 3,365 ft.
Superior's No. 1 Regier, SE NW Sec. 11-22-3w ..... Drlg. 2,375 ft.
Independent & Reserve Oil Co.'s No. 1 Moulds, C NE Sec. 7-24-1w ..... Drlg. 3,722 ft.
Liggett et al's No. 1 Regier, C SE NW SE Sec. 2-23-3w.. Drlg. 3,240 ft.
E. W. Marland, Inc.'s No. 1 Neiman, C NE SE NE Sec. 8-24-2 ..... Drlg. 2,705 ft.
McCulloch et al's No. 1 Prouty, NW cor. SW Sec. 3-23-1w ..... Drlg. 3,380 ft.
Mrs. Gay et al's No. 1 Grove, C NW NE NW Sec. 29-23-1w ..... Shut down 3,360 ft.
Jolly & Ogg's No. 1 Randall, NE cor. NE Sec. 11-24-1w.. Shut down 3,444 ft.
Jolly & Ogg's No. 1 Hupp, SE cor. NE Sec. 22-23-1w .... Shut down 3,220 ft.

HODGEMAN COUNTY

Phillips Pet.'s No. 1 Hausman, NW NE Sec. 30-22-22w.. Drlg. 4,620 ft.

JEFFERSON COUNTY

Wichita Oil Co.'s No. 1 Simpson, NW cor. SW SW Sec. 19-10-17 ..... Rigged up and shut down.

KINGMAN COUNTY

D. P. Fleeger's No. 1 Ashcraft, SE SW NE Sec. 16-28-7w ..... Drlg. 3,970 ft.
White Eagle's No. 1 Lorenz, C NE SW SE Sec. 25-27-5w. Drlg. 3,774 ft.

LANE COUNTY

Robinson's No. 1 Dickerson, Sec. 11-18-27w ..... 8-in. csg. 2,625 ft.
Blankenship Pet. Co.'s No. 1 Schaeffer, NE cor. NE Sec. 24-16-28w ..... Spudded and shut down.

LYON COUNTY

Gordan-Stats' No. 1 Proche, C NE SE NW Sec. 16-17-10.. Drlg. 1,400 ft.

MARION COUNTY

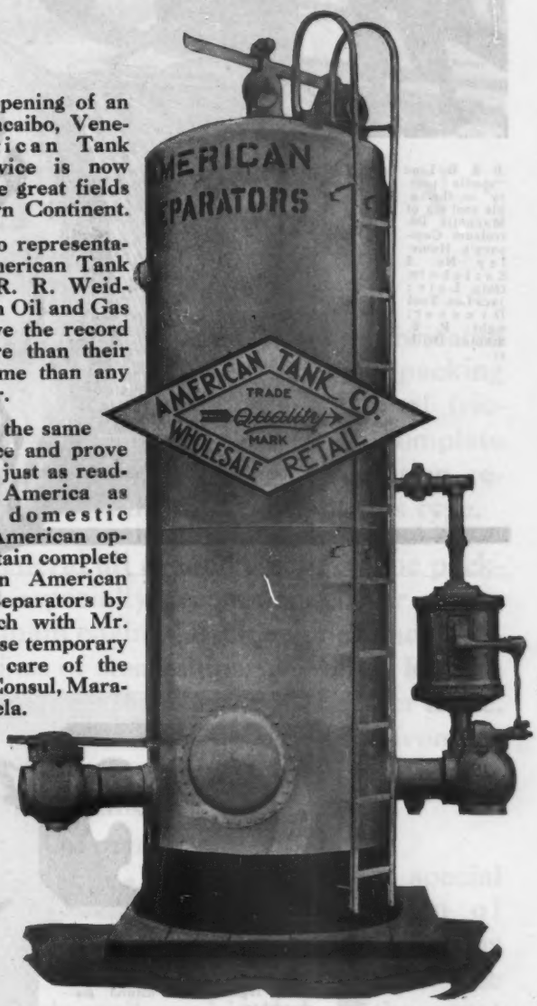
Empire O. & R. Co.'s No. 1 Black, C NE NW SW Sec. 27-19-2 ..... Rig.
Marshall et al's No. 1 Higgins, NE cor. Sec. 33-19-5 .... Rig.
White Eagle's No. 1 Ucker, NE NW Sec. 24-17-2 ..... Drlg. 2,850 ft.

McPHERSON COUNTY

Gait Brown et al's No. 1 Zeitlow, C NE SE SE Sec. 7-17-1w ..... Rig.

AMERICAN OIL AND GAS SEPARATORS

Service in South America



Through the opening of an office in Maracaibo, Venezuela, American Tank Company service is now available in the great fields of the Southern Continent.

The Maracaibo representative of the American Tank Company is R. R. Weidman. American Oil and Gas Separators have the record of saving more than their cost in less time than any other separator.

They will give the same efficient service and prove their economy just as readily in South America as they have in domestic fields. South American operators may obtain complete information on American Oil and Gas Separators by getting in touch with Mr. Weidman, whose temporary address is in care of the United States Consul, Maracaibo, Venezuela.

In the United States Complete Stocks are carried at:

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"Complete Tank Service for the Oil Industry"

AMERICAN TANK COMPANY

OKLAHOMA CITY

Sales Offices

TULSA AND FORT WORTH

B & B Line "spools pretty" on the cable tool rig of Magnolia Petroleum Company's Homsley No. 3 Earlsboro, Okla. Left: Jack Lee, Tool Dresser; right: R. S. Stanley, Driller.

"Just Naturally A Good Line"

Listen to R. S. Stanley, Driller, calling down Jack Lee, Tool Dresser, for saying they have good luck with their *B & B Cable Tool Drilling Lines:* "Good luck, your eye! It's just naturally a good *line.*"

Naturally it is. The wire is specially drawn and put through four very strict tests. It is laid up on machinery designed to impart to the rope that *springy* quality which makes drillers call it "the easiest handling line made—a mighty pretty spooling line that you can count on to drill ahead of the tools."

Distributors in all fields handle B & B Patentsteel, Extra Strong Cast Steel and Cast Steel *Cable Tool* Drilling Lines, Sand and Pumping Lines, and invincible Yellow Strand Rotary Lines.

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BRODERICK & BASCOM ROPE COMPANY
St. Louis, Mo.
Factories: St. Louis and Seattle

BRODERICK & BASCOM DRILLING LINES

N 597

THIS installation of a Chaplin-Fulton Low Pressure Regulator represents modern practice in safety regulation of natural gas—everywhere.

C-F Regulators of more than forty types are widely used where safety is considered quite important, and dependable operation is demanded.

Extra sensitive in response to the variations in flow, they are strong, well designed and have all the characteristics that superior workmanship has been able to create during the experience of the oldest gas regulator manufacturing organization.

Every type of C-F gas regulator is fully illustrated and described in our Catalogue and Bulletins. Present your service problem and we'll send you the correct Regulation solution.

The Chaplin-Fulton Mfg. Co.
28-40 Penn Ave., Pittsburgh, Pa.

Dixie Oil Co.'s No. 1 Johnson, SW cor. Sec. 20-17-3w ..Drlg. 375 ft.
McCulloch Oil Co.'s No. 1 Cornelius, SW cor. Sec. 7-21-4..Drlg. 3,140 ft.
Kansas Oil Co.'s No. 1 Otto, SW NW Sec. 21-20-1w ....Shut down 2,363 ft.
Reynolds et al's No. 1 Koehn, NE SE NE Sec. 15-20-2w ..Drlg. 3,002 ft.
McPherson O. & G. Co.'s No. 1 Fisk, SW NE NE Sec. 15-21-2w .....Shut down 3,432 ft.
McPherson O. & G. Co.'s No. 1 Sorenson, C SE Sec. 23-18-2w .....Drlg. 3,363 ft.
Milmac's No. 1 Decker, NW cor. Sec. 11-20-3w .....Fishing 1,500 ft.
Perry et al's No. 1 Wade, C SE Sec. 20-19-4w .....Shut down 3,917 ft.
Transcontinental Oil Co.'s No. 1 Algers, NE SW Sec. 1-19-5w .....Drlg. 3,916 ft.

MORTON COUNTY

Mangle et al's No. 1 Youngren, C SE NW Sec. 24-32-42..Spudded; shut down.

MORRIS COUNTY

Arrow O. & G. Co.'s No. 1 Kinkle, C NW NE Sec. 8-16-7..Drlg. 940 ft.

NORTON COUNTY

Richards et al's No. 1 Colby, C SW Sec. 17-4-21w .....Rig on ground.

OSBORNE COUNTY

Phillips Pet. Co.'s No. 1 Grieve, NW SE NE Sec. 6-7-12w..Drlg. 3,709 ft.
Mid-Kansas' No. 1 Boyce, SE cor. NW Sec. 18-6-13w ....Drlg. 4,235 ft.

PAWNEE COUNTY

Prairie O. & G. Co.'s No. 1 Black, SW NE NE Sec. 11-20-18w .....Drlg. 1,535 ft.

PRATT COUNTY

O'Haver & Jones' No. 1 Garacke, C NE SW Sec. 7-26-14w .....Drlg. 2,620 ft.
O'Haver & Jones' No. 1 Lunt, C SW NW Sec. 15-28-14w..Shut down 4,743 ft.
Wilcox O. & G. Co.'s No. 1 Unknown, SW NW Sec. 7-26-15w .....Drlg. 1,300 ft.

RENO COUNTY

Empire O. & R. Co.'s No. 1 Blitz, NE NW Sec. 26-25-4w .....Drlg. top chat 3,632 ft.
Wilcox O. & G. Co.'s No. 1 McPheeters, SW NW Sec. 22-26-8w .....Drlg. 3,035 ft.
Witt's No. 1 Olsen, C SE NW Sec. 14-22-6w .....Fishing 2,010 ft.
Skelly Oil Co.'s No. 1 Birkett, NE SW Sec. 30-24-7w ....Total depth 4,137 ft.; underreaming 8-in. csg.

RICE COUNTY

Tatlock et al's No. 1 Ploog, C SW SE, Sec. 33-18-9w ..Rig.
Boucher's No. 1 Bleg, Sec. 16-21-10w .....Drlg. 1,750 ft.
Miller & Detrick's No. 1 Shumway, C SW Sec. 2-20-9w ..Drlg. 3,278 ft.
Burgher's No. 1 Fair, C SE NE NE Sec. 14-21-10w ....Shut down 1,200 ft.
Derby Oil Co.'s No. 1 Johnson, C NW NE SE Sec. 24-20-6w .....Drlg. 2,200 ft.
Milmac's No. 1 Cain, C SE Sec. 29-19-7w .....Shut down 3,700 ft.
Danciger et al's No. 1 Bell, C SW Sec. 16-19-8w .....Drlg. 1,750 ft.
McCullough et al's No. 1 Williams, C NE Sec. 35-20-8w..Rig.

RILEY COUNTY

Arkansas Fuel Oil Co.'s No. 1 Martin, SE NE SW Sec. 24-8-4 .....Drlg. 2,570 ft.
Grey et al's No. 1 Smith, NE SE Sec. 30-6-6 .....Shut down 1,970 ft.
Derby & Shaw's No. 1 Lindstrom, NE cor. Sec. 32-7-5e..Shut down 2,246 ft.

RUSSELL COUNTY

Cress & Hacke's No. 1 Unknown, SE cor. Sec. 6-13-12w..Rig on ground.

ROOKS COUNTY

Central Commercial's No. 1 Baxa, Sec. 22-9-17w .....Drlg. 3,020 ft.

RUSH COUNTY

Milmac's No. 1 Mohr, C NW Sec. 11-18-16w .....Shut down 50 ft.
Danciger Oil Ref. Co.'s No. 1 Pivonka, NE cor. SW NE Sec. 17-19-17w .....Fishing 4,145 ft.

SALINE COUNTY

Austin et al's No. 1 Olsen, NW SW SE Sec. 10-15-4w ....Drlg. 3,642 ft.
Templeman's No. 1 Lanbengager, C SW Sec. 20-15-5w ..Drlg. 3,565 ft.
Twin Mounds' No. 1 Weis, NW NE NW Sec. 20-13-4w..Shut down 700 ft.

SEDGWICK COUNTY

Moore's No. 1 Stewart, C NE SE NW Sec. 18-28-1w ....Sand 3,675-82 ft.; hole full water; shut down.
Tavender et al's No. 1 McLean, SE SW SE Sec. 23-26-1w .....Rig.
Wilson et al's No. 1 Ottaway, SW NW Sec. 16-28-2w ....Rig.
Marland and Amerada's No. 1 Sensorth, NW cor. Sec. 25-28-4w .....Drlg. 3,875 ft.
McCullough Oil Co.'s No. 1 Buckles, NW cor. SE Sec. 3-28-1w .....Fishing 1,115 ft.
LaFont et al's No. 1 Carlton, C SE SE SW Sec. 24-28-1e..Shut down 1,385 ft.

SHAWNEE COUNTY

Jenkins & Scott's No. 1 Sherman, NW NE Sec. 28-10-15 .....Drlg. 860 ft.
Jenkins & Scott's No. 1 Haden, NE SE Sec. 8-12-14 ....Shut down 750 ft.

SHERIDAN COUNTY

Mandalin O. & G. Co.'s No. 1 Unknown, C SE SW SW Sec. 27-7-26w .....Spudded; shut down.

STAFFORD COUNTY

Gibson's No. 1 Mueller, C SW Sec. 11-22-14w .....Shut down 2,415 ft.

STEVENS COUNTY

Argus Gas Co.'s No. 1 Hobbe, C SE Sec. 17-32-37w .....Drlg. 325 ft.
McKenna's No. 1 Unknown, C NW NW Sec. 29-33-36w..Shut down 2,620-60 ft.; 6,000,000 ft. gas.
Trees Oil Co.'s No. 1 Thompson, C NE SW Sec. 3-35-38w..Shut down 2,250 ft.
W. Sidwell et al's No. 1 Kelly, SW cor. NE Sec. 16-34-38w .....Shut down 1,600 ft.

SMITH COUNTY

Phillips Pet.'s No. 1 Clydesdale, SE NW Sec. 23-5-14w..Drlg. 3,615 ft.

SUMNER COUNTY

Hatfield's No. 1 Dauber, NE cor. Sec. 18-30-1w .....Shut down 50 ft.
Kingwood Oil Co.'s No. 1 Stayton, C NE Sec. 18-31-2w..Drlg. 3,412 ft.
Slick et al's No. 1 Peasel, NW cor. Sec. 33-31-1w .....Chat 3,651-56 ft.; est. 250 bbls.
Lario O. & G. Co.'s No. 1 Osborne, NE SE Sec. 21-30-1w .....Fishing 3,300 ft.
E. K. Carey & Larado Oil Co.'s No. 1 Welsch, SW SE Sec. 9-34-1e .....Chat 3,625-40 ft.; dry; fishing 3,655 ft.
Shell Pet. Corp.'s No. 1 Armstrong, NE cor. Sec. 12-33-1e. Drlg. 3,615 ft.
Davidson et al's No. 1 Strickland, SW cor. SE Sec. 12-35-1w .....Rig.

TREGO COUNTY

Dixie & Amerada's No. 1 Reitmayer, C NE NE Sec. 19-14-21w .....Shut down 825 ft.
Prairie Oil & Gas Co.'s No. 1 Kutina, C NE SW NE Sec. 29-15-21w .....Drlg. 3,346 ft.
Producers & Refiners Corp.'s No. 1 Kingsley, C SE NW NW Sec. 24-14-21w .....Drlg. 3,480 ft.
Phillips Pet. Co.'s No. 1 Spitz, SE cor. Sec. 24-12-25w ..Drlg. 3,880 ft.
Day et al's No. 1 Gugler, SW NE NE Sec. 26-12-21w ....Shut down 50 ft.
Day et al's No. 1 Unknown, NE NW SW Sec. 2-11-21w ..Shut down 3,250 ft.

WASHINGTON COUNTY

McCool & Vincent's No. 1 Linn, NW cor. NE Sec. 27-4-3..Shut down 3,100 ft.

WILDCAT OPERATIONS IN NEBRASKA

FRANKLIN COUNTY

U. R. Drlg. Co.'s No. 1 Brunkie (twin well), C NW SW NE Sec. 2-3n-13w .....Rig.

CHASE COUNTY

Chase Pet. Co.'s No. 1 Ingold, C NE Sec. 24-6n-33w ....Shut down 4,200 ft.; will run 8 in. csg.

FURNAS COUNTY

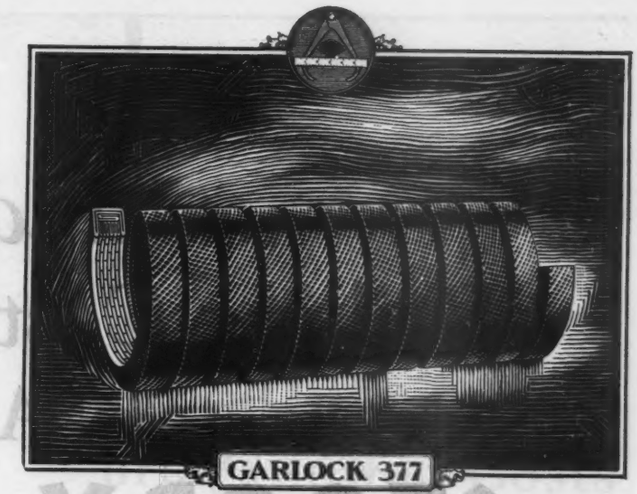
Southwestern Pet. Corp. of Nebraska's No. 1 Montague, SE SW SW Sec. 28-1n-22w .....Shut down 1,750 ft.
Graham Bros.' No. 1 Edwards, NW SW Sec. 13-2n-22w..Shut down 3,250 ft.

RICHARDSON COUNTY

Norton et al's No. 1 Hauser, NE cor. Sec. 26-1-14 .....Location.

WEBSTER COUNTY

Mid-Kansas Exploration Co.'s No. 1 Platt, C SE one-half Sec. 3-1n-11w .....Shut down 555 ft.



SATISFACTION

This factor is built into every product of The Garlock Packing Company

Service Garlock-377 is a lubricated non-friction metal packing with side walls, back and cushion of frictioned asbestos cloth. It will give complete satisfaction on any packing installation requiring a Mechanical Packing of this type.

It is a general all around steam engine packing and especially recommended for piston rods of main engines, deck engines and hoisting engines of steamships, as well as kickers and steam niggers as used in the lumber trade. Excellent service has been obtained from installations made on steam shovels, dredges and steam hammers.

Construction The special design of Garlock-377 gives it extreme flexibility, thus enabling it to closely encircle the rod. The asbestos side walls and back hold the metal in place and the folded asbestos core above the metal acts as a pusher and compensating cushion to bring the metal to the rod at an even pressure. The ratio of wear on the bearing surface of the packing is the same at all times on account of the square construction of the metal core.

The Garlock Packing Company

Manufacturers of Mechanical Packings

Palmyra, N. Y., U.S.A.

...and again
Drilling Costs are Lowered
by Another
STOODY PRODUCT

AN almost unbelievably hard cutting edge, furnished in welding rod form. Flowed on in welding rod style! And *one layer is sufficient!* Applied by either electric arc or acetylene torch. No mixing, no carbon arc, no complicated methods, *just results ... and how!*

Sounds impossible? Surely! *It was* until BOROD was finally tested and proved. BOROD provides a tungsten-carbide surface simply, quickly and cheaply. It *makes hole* in any formation, holds reaming edges to gauge, and presents no difficulties of application. A card or letter will bring detailed information.

BOROD *is the result of intensive research by the same group which perfected those world-famous products*
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and BORIUM

STOODY COMPANY

Manufacturers of WELDING ROD • ALLOY STEEL • EQUIPMENT

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Dallas Tulsa Houston

DISTRIBUTORS LOCATED IN PRINCIPAL INDUSTRIAL DISTRICTS OF THE WORLD

NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE
Week Ended December 11

Gray County

Vulcan Oil & Gas Co.'s No. 1 J. M. Carpenter, 330 feet south and east of the NW cor. of the W half of the NW of Section 25, Block 25, H.&G.N. Danciger Oil & Refining Co.'s No. 2 M. S. Arnold, 330 feet north and west of the SE cor. of Section 149, Block 3, I.&G.N. Follett Petroleum Corp.'s No. 1 J. A. Hood, 330 feet north and east of the SW cor. of the W half of the SW of Section 32, Block 3, I.&G.N. Jean Petroleum Corp.'s No. 1 Furneaux Brothers, 330 feet south and east of the NW cor. SE of Section 200, Block B-2, H.&G.N.

Hartley County

Dana Oil & Gas Co.'s No. 1 F. P. Feltz, at the center of the NE of Section 81, Block 44, H.&T.C.

Wheeler County

Dunaway Bros.' No. 1 J. A. Worley, 330 feet south and west of the NE cor. of the NW of Section 39, Block 24, H.&G.N. Holmes et al No. 2 I. Close, 990 feet north and 400 feet west of the SE cor. of the SE of the SE of Section 82, Block 23, H.&G.N. Murchison & Fain's No. 1 W. L. Cooper, at the center of the SW of the NW of Section 80, Block 23, H.&G.N. Upham Gas Co.'s No. 7 I. Close (Gooch), 330 feet north and west of the SE cor. of the NE of Section 81, Block 23, H.&G.N. Wishkamper and others' No. 2 Johnson, 200 feet south and west of the NE cor. of the SE of Section 50, Block 17, H.&G.N.

NORTH CENTRAL AND WEST TEXAS

Archer County

Barnsdall Oil Co.'s No. 9 T. B. Wilson-A, 750 feet north and west of the SE cor. of their 200-acre lease "A" and located in the B. J. Howard Survey A-179. Burns & Long's No. 10 W. P. Ferguson, 450 feet north and 480 feet east of the SW cor. of the NW of the NE of Section 2, S.P.R.R., A-1,190. Humble Oil & Refining Co.'s No. 1 L. F. Wilson (McCrory, trustee), 150 feet north and west of the SE corner of the N 40 acres of the S 140 acres of the D.L.&C. Co. Survey, A-1,093. United Production and Consolidated Oil Co.'s No. 1 G. A. Mangold, 150 feet north and 1,350 feet east of the SW cor. of Section 17, Mangold Subdivision. L. T. Burns and others' No. 1 M. M. Dubois, 750 feet south and 1,170 feet west of the NE cor. of Section 10, G. P. Meade Subdivision, L. M. Pasture. R. I. Carter's No. 1 J. A. Young, 150 feet north and west of the SE cor. of the W half of the NE of Section 2,426, T.E.&L. Clark & Douglas Oil Co.'s No. 1 W. J. McClure-B, 450 feet south and 150 feet east of the NW cor. of the S 69 acres of the E 138 acres of Section 13, Crawford Subdivision. W. R. Duke, and others' No. 1 H. F. Harmel, 150 feet north and 1,400 feet west of the SE cor. of the E 60 acres of the S 80 acres of the N 160 acres of Section 2,491, T.E.&L. W. King's No. 1 W. H. Portwood, 150 feet south and east of the NW cor. of Section 2,411, T.E.&L.

Magnolia Petroleum Co.'s No. 6 O. Deitrich, 150 feet north and west of the SE cor. of the W 20 acres of the N 31 acres of the NE, Section 4, B.B.B.&C., A-1,150. A. P. Nicholson's No. 1 Mrs. M. Taylor, 1,720 feet north and 150 feet east of the SW cor. of Section 20, W. L. Herring Survey A-168.

Brown County

Cranfill & Reynolds' No. 3 M. W. Bull, 750 feet north and 200 feet west of the SE cor. of the M. W. Bull 115-acre tract out of the R. Honeycutt Survey No. 623. Humble Oil & Refining Co.'s No. 2 J. M. Carter, 450 feet south and 123 feet west of the NE cor. of the J. M. Carter 15-acre Survey. O. H. Shoup, Jr.'s No. 10 J. Byler, 400 feet north and 2,000 feet east of the SW cor. of the T.&N.O. Survey No. 43. Combs & Rogers, and others, No. 1 J. M. Barnes, 750 feet south and 1,350 feet west of the NE corner of the N. Hawkenberg Survey No. 105.

Callahan County

Hudson-Stewart & Robinson's No. 1 G. A. Swafford, 700 feet south and 100 feet west of the NE cor. of the B. McKinney Survey No. 769. Jordan, and others' No. 1 Seale Estate, 1,295 feet north and 150 feet east of the SW cor. of Section 12, Block 3, T.&P.

Clay County

J. F. Merrick, and others' No. 3 G. W. Byers & Co., 1,767 feet south and 150 feet west of the NE cor. of Section 15, Byers Brothers Subdivision. Saxet Oil Co.'s No. 1 J. C. Stine Estate "J", 875 feet south and 150 feet west of the NE cor. of Section 1, Parker County School Land, A-374.

Coleman County

Texas American Syndicate's No. 3 Mrs. N. D. Newton, 918 feet north and 800 feet east of the NE cor. of Section 5, San Augustine University Survey No. 519 and located on the N. D. Newton 1,039-acre tract. Lloyd Oil Corp.'s No. 3 Bartholomew, 545 feet north and 150 feet east of the SW cor. of the William Farris Survey, No. 279. Same corporation's No. 4 Bartholomew, 150 feet north and 960 feet east of the SW corner of the William Farris Survey No. 279. Same corporation's No. 5 Bartholomew, 940 feet north and 150 feet east of the SW cor. of the William Farris Survey No. 279. Reeves & Riley No. 1 A. Reeves, 1,077 feet north and 150 feet west of the SE cor. of the A. Reeves 162-acre tract out of the J. C. Goodrich Survey No. 245. Taylor-Link Oil Co.'s No. 1 S. C. Stewardson, 150 feet south and west of the NE cor. of Section 96, E.T.R.R. Tidal Oil Co.'s No. 1 J. L. Stewardson, 150 feet north and west of the SE cor. of Section 91, E.T.R.R.

Cooke County

Lloyd Oil Corp.'s No. 8 D. B. Wheelock, 458 feet north and 1,830 feet west of the SE cor. of the C. Underwood Survey A-1,073.

Crane County

Curch & Fields' No. 1 University (Collett), 2,310 feet south and west of the NE cor. of Section 34, Block 30, University Land. Church & Field's No. 5 University (Dewell), 990 feet south and 330 feet west of the NE cor. of the W half of the SW of Section 39 Block 30, University Land. Humble Oil & Refining Co.'s No. 1 University (Dewell) "E," 2.310 feet south and 330 feet west of the NE cor. of Section 40, Block 30, University Land.

Eastland County

Lone Star Gas Co.'s No. 1 Lewis, and others' 986 feet south and 1,168 feet west of the NE cor. of Section 2, East Subdivision, T. A. Howell Survey. H. B. Mays, and others' No. 1 J. L. Brashear, 920 feet south and 350 feet east of the NW cor. of the J. L. Brashear tract out of Section 6, Block 6, E.T.R.R. Texas Pacific Coal & Oil Co.'s No. 29 J. E. Butler, 3,700 feet south and 1,350 feet west of the NE cor. of the J. E. Butler 933-acre tract out of the John York Survey. Lone Star Gas Co.'s No. 5 O. P. Storm, 545 feet north and 1,920 feet west of the SE cor. of Section 4,0, S.P.R.R. Pitzer & West, and others, No. 1 W. F. Reagan, 300 feet south and 195 feet west of the NE corner of the W. B. Stamford Survey. Texas Pacific Coal & Oil Co.'s No. 1 G. Parrack, 300 feet north and west of the SE cor. of the SW of Section 63, Block 4, H.&T.C.

Ector County

Landreth Production Corp.'s No. 1 University-T, 990 feet south and 440 feet west of the NE cor. of Section 3, Block 35, University Land.

Glasscock County

Amerada Petroleum Corp.'s No. 1 R. C. Coffee, 990 feet south and 2,310 feet east of the NW cor. of Section 22, Block 33, Township 2-S, T.&P. Kirby Petroleum Co., and others' No. 3 J. W. Baker, 1,650 feet south and 330 feet east of the

(Continued on Page 243)

Good lubrication brings lower Costs

One of the best ways to lower production costs is through proper lubrication of machine bearings. The moving parts run lighter, less power is required to drive them, and they last longer.

Watch lubrication particularly when starting and stopping. Then the fluid film of any lubricant is broken. Unless you are using a good oil, wear and tear soon take their toll.

Humble Oils have the valuable quality of leaving a semi-plastic, adsorbed, protective film on the surface of the metal after the fluid film is broken. You get enough lubrication to hold friction down until the film is re-established by rotation of the bearing. Once the parts are moving, Humble Oils retain the proper viscosity to lubricate efficiently at the temperatures produced by high speeds and peak loads.

There is a Humble Oil which is specially prepared to meet the needs of your line shafts, countershafts, machine tools, car, or truck. Use this oil regularly. It's cheaper than buying new parts.

Humble Oil & Refining Co.
Houston, Texas

HUMBLE OIL & REFINING CO. HUMBLE OILS HOUSTON, TEXAS

FOLLOWING THE DRILL AROUND THE WORLD

(Continued from Page 112)

Venezuelan Oil Concessions, Ltd., reports its gas production as follows:

Year	Nat. Gas (Metric Tons)
1924	450
1925	4,400
1926	70,521
1927	96,605
Total (4 years)	171,976

After the extraction of casinghead gasoline, by absorption or pressing, these companies utilize the remaining natural gas (in quantities given above), for lighting, cooking and power purposes in their own camps. The Caribbean, in 1927, began the sale of its gas to another company, which uses it for similar purposes and at the end of the year had disposed of 835,631 tons in this manner. The figures given in the above tables do not, of course, include gas produced but returned to the wells as a "lift."

MEXICO

The deepest producing well in Mexico is the Aguila Petroleum Co.'s No. 4 Mecatepec, which has a total actual depth of 1,100 meters and a total subsea depth of 977 meters. The shallowest producing well in Mexico is the Empire Gas and Fuel Co.'s No. 6 West Maguabes, which has a total actual depth of 391 meters and a total subsea depth of 381 meters. The Rich Mex Oil Co.'s No. 42 Cacalilac, while having a greater actual depth than the Empire well, has a shallower subsea depth, the total subsea depth being 373 meters, which can be explained by a greater elevation of the Rich-Mex well.

Oil well spacing policy in Mexico is governed by law which requires that all wells be located 60 meters from other producing wells and 30 meters from lease lines. This boundary requirement, however, does not apply to Federal Zone development on account of the narrow width of the Federal Zone.

There are three methods of drilling used in Mexico, the rotary drills, cable tools and diamond drills. Steam is used, principally, for oil field power. The gasoline motor has been used on rotary drills.

Air-Gas Lift

The use of air compressors or natural gas, as a means of stimulating or increasing production has not been used extensively due to the fact that most of the wells have sufficient pressure without resorting to artificial means. Air compressors have, however, been used in a few instances in the heavy oil district and in one case was of value, the Mexican Petroleum Co.'s Shepard lease in the Hacienda Tortuga. One of the wells on this lease, No. 2 Shepard, did not flow naturally although the oil filled up to the top of the hole and remained there, indicating fluid level. The hole was swabbed for about 15 days and produced at the rate of about 1,500 bbls. daily, but this method was found to be expensive and it was decided to produce the oil by air. An air compressor was installed and following its installation and operation, the well produced 1,000 bbls. daily. The same company's No. 6 Shepard did not flow naturally and produced 500 bbls. daily by using an air compressor. It is believed that in special cases, where wells have a constant fluid level and insufficient pressure to clean the hole, that the use of an air compressor or natural gas is justified and should result in increased production.

The natural gas industry up to this time has not assumed large proportions. The casinghead gasoline plants installed follow:

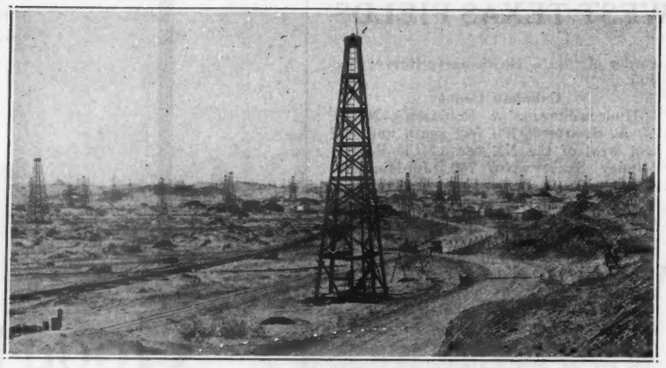
Huasteca Petroleum Co., Cerro Azul and Tierra Blanca plants, daily capacity 300 bbls.

Aguila Petroleum Co., Los Naranjos plant, capacity 75 bbls. daily.

Penn Mex Fuel Co., Alamo plant, 50 bbls. daily.

All are the absorption type and a chemical by-product of the process is sulphur. The Penn Mex and Aguila companies use the gasoline recovered for motor fuel in the field. The Huasteca Petroleum Co. pumps the gasoline recovered through a 3-inch line to its Tampico terminal where it is blended with other oils.

OIL FIELD AT NEGRITOS ON PERUVIAN COAST



—By Ewing Galloway, N. Y.

Developed by International Petroleum Co. General view of stretch of desert which is yielding oil in abundance. The wells are scattered over a large area about the town in which the company's refinery is being operated.

RUMANIA

No government statistics are compiled in Rumania showing the number of wells drilled resulting in dry holes. The following figures give the daily initial production of some of the wells of different companies which may be taken as an average, however, three or four wells drilled in the Moreni district during the past two years have given an initial flow of around 1,000 tons per day, but such flows were of short duration:

1,250	bbls.	per	24 hrs.
1,120	bbls.	per	24 hrs.
560	bbls.	per	24 hrs.
500	bbls.	per	24 hrs.
200	bbls.	per	24 hrs.
130	bbls.	per	24 hrs.

The depth of Rumanian oil wells in the major producing districts depends upon the strata being worked. The wells tapping the Dacic strata run from 450 to 650 meters, while those of the Meotic strata run from 900 to 1,500 meters in depth.

The Rumanian laws require that wells be put down not less than 30 meters from boundaries and at least 60 meters apart when tapping the same strata and not less than 15 meters apart when tapping different stratas. The oil companies, for economic purposes, favor spacing wells 75 to 150 meters apart and this policy is being generally carried out by the larger companies.

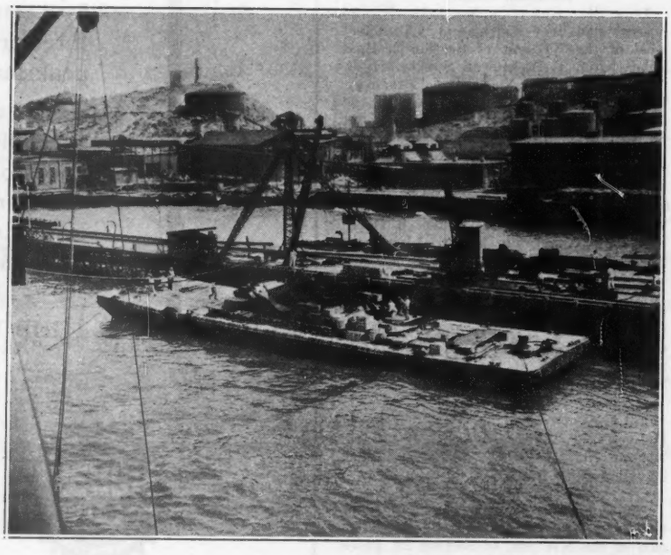
Method of Drilling

Some 50 per cent of the wells being drilled are being put down with the rotary system, 5 per cent with American cable tools, 25 per cent with the Canadian and other percussion systems and 20 per cent with the Raky system. About 60 per cent of the drilling is being done with steam power, 20 per cent with electric power and 20 per cent with power from combustion engines. The fuel employed is largely oil and natural gas.

The system of using compressed air or natural gas as a means of stimulating oil flow is in its infancy, it being estimated by oil men that only about 5 per cent of the present production is being obtained by the use of this system. However, this method is rapidly gaining in popularity.

There are now 12 plants in the country occupied in extracting gasoline from natural gas with a combined capacity of 110,000 kilograms per day and production is now very near capacity. The average production of gasoline from 1 cubic meter of gas is about 40 ounces. However, this is subject to wide variation. Gas from the deep strata yields much less gasoline than that obtained at lesser depth.

OIL DEVELOPMENT AT TALARA IN PERU



—By Ewing Galloway, N. Y.

Wharves at new oil town of Talara, on coast of Peru, where International Petroleum Co. has developed rich field. The company has built modern industrial towns at Talara and Negritos.

TRINIDAD

The production from wells in Trinidad is not so nearly uniform as in the case of the majority of the oil fields of the United States. It often happens that dry holes are drilled adjacent to large producing wells, etc. Thus initial production may range from nothing up to 14,000 bbls. per day, the latter figure representing the production of the largest well.

Due to the number of producing sands, their lenticularity, and to the fact that most of the lands are divided into five and ten-acre tracts, the spacing of wells in Trinidad does not follow any fixed policy.

Some of the companies who own large tracts, space their deeper wells—those 1,500 feet to 3,000 feet deep—600 feet apart, with the idea that intermediate wells can be drilled at a later time, if desired. Most companies, however, space their wells 300 feet to 450 apart, depending on the expected depth and land conditions.

Shallow wells to higher sands are drilled sometimes within a few feet of deep wells, the derricks and rigs of the latter being used in the operation. Boundary wells are required to be located 150 feet from the land lines, according to the policy of the Mines Department.

The numerous producing sands of Trinidad range in depth from around 300 feet at Forest Reserve (Fyzabad) and Tabaquite to around 2,700 at San Francique and Palo Seco. Trinidad Leaseholds Well No. 119, at Fyzabad, which was completed in May, 1927, with an initial production of 4,000 bbls. per day from a depth of 3,183 feet, may be mentioned as the deepest producing well. The Apex (Trinidad) Oilfields, Ltd., is drilling two deep test wells in the San Francique district, which give some promise of production at depths of 3,400 feet and 4,986 feet. The majority of the producing wells of the colony range in depth from 1,000 to 2,000 feet.

Methods of Drilling

With the exception of cable tools used at Tabaquite, the rotary drilling method is used exclusively in Trinidad.

Spudding machines (cable tool method) are used by Trinidad Central Oilfields, Ltd., in the shallow oil fields at Tabaquite.

Canadian pole tools and cable tools have been used in former years; but, with the exception noted, all such methods and equipment have been discarded.

Steam is used extensively as a source of oil field power in Trinidad, although gas engines have been introduced during recent years.

Only two operating companies have used the air lift method in Trinidad. Trinidad Leaseholds, Ltd., is using two 500 cubic feet machines to operate an average of from eight to ten wells in the Fyzabad district. The Leaseholds company has appropriated $225,000 for the installation of a modern air lift plant at some future time. One company has experimented in a small way with the use of one 350 cubic feet air compressor on one well at San Francique.

Estimates prepared by the manager of the Trinidad Oil Fields Operating Co., Ltd., indicate that the dependable supply of natural gas available to oil operating companies in Trinidad probably does not exceed 5,000,000 feet per day, although the flush production from new wells might serve to increase this supply from time to time. There is, however, enough gas available to permit a more extensive use of gas engines.

BRAZIL

There is no production of petroleum in Brazil. Various outfits have been brought in, including both rotary and cable drills, but figures as to depths reached in test wells are conflicting and unreliable. In the case of some wells drilled in the State of Sao Paulo at the expense of the state government, there were many accusations of fraud in that the contracts were taken on footage, and incorrect reports as to depths reached were returned.

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Attention to detail, so that the acme of efficiency may be obtained with the plainest simplicity, is a characteristic of Duplex Zero Hour Electric Bomb design. The result is an electrically operated, time-controlled detonating device for oil well shooting that enjoys favor in Argentine as well as in Oklahoma, in Burma as well as in Texas, and can be operated by any person who understands the English language.

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The same size container that formerly held the original Zero Hour Bomb, with one watch and one set of blasting caps, now holds the Duplex, with two watches and two sets of blasting caps. Duplication of the vital working parts of the bomb, namely the watch and its firing connection with the blasting caps, forms the Duplex principle. Thus, two complete timing and firing mechanisms, each independent of the other, are enclosed in the same metal, fluid-tight container that formerly held one only, reducing the chance of a failure with the new Duplex Bomb to a figure so small that it is almost beyond computation in ordinary mathematics. In setting, this means only the winding and setting of an additional watch, identical with the first one, followed by the attachment of an additional igniter and blasting caps. This attachment has been simplified by a plug and socket connection, making it like plugging in an electric light cord in the wall and insuring perfect electrical connections. A gold spring firing pin, with tempered flexibility, holds accurately to the "0" firing point, no matter how often the hour hand passes either forward or backward across it, in testing. A denotating device that operates on such a logical, time-tested principle as that found in a flashlight, and controlled by such a symbol of dependability as a pocket watch, provides the same logical assurance of dependable results, sponsoring marked efficiency and economy.

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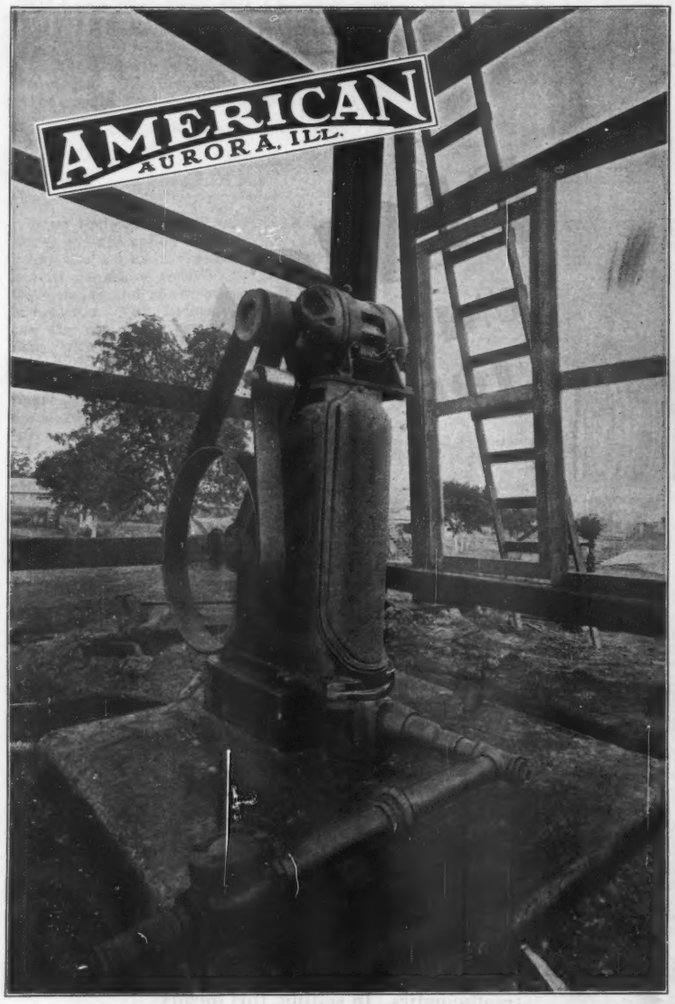

"American" Enclosed Power Heads for Water Wells

Illustrated above is an "American" totally enclosed power head for water service in connection with the oil wells of the Amerada Petroleum Corporation in the Seminole field. They are built for hard service, pipe line stations, tank farms, gasoline plants and refineries. They are made in various sizes to meet any usual well conditions.

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It has been stated by one of the principals in the one private company now known to be prospecting, that none of the Government wells went more than a few hundred feet. All holes so far drilled have been dry to all practical purposes, only a few small pockets of oil of a few gallons each ever having been found.

Prospecting is going on in the lower valley of the Tapajoz River. A well 50 centimeters in diameter was put down 300 meters just outside, Itaituba, at Bom Jardim. Gas and hot water were struck at this depth, the former being used by the workmen for lighting and cooking. This is said to be the first success attained by the federal engineers in two years' work in the Tapajoz, much time having been spent in drilling at Aveiro and along the Cupary River, a tributary on the Tapajoz. The Tapacura River appears to be the more likely oil zone. Itaituba, at which gas was struck, is at its mouth on the opposite side of the Tapajoz River. It is said that the seam which is believed to bear oil runs up the Tapacura River.

One American expressed his belief that after much research in the State of Para he was convinced there was little promise of finding and recovering oil in that state.

BOLIVIA

The Standard Oil Co. of Bolivia (a subsidiary of the Standard Oil Co. of New Jersey), is the only company operating in Bolivia; and they are still in the exploration stage. There is no production as yet; and wells are capped as they are brought in. The depth of the shallowest well is about 600 meters, and of the deepest about 1,100 meters. The company is drilling one well for each 50,000 hectares of its concession, according to the terms of their contract with the Government.

Latest American drilling methods, in charge of experienced American drillers, are used exclusively. About 50 per cent each rotary and cable are used. No other methods are in use. Steam power is generally used; with wood or petroleum as fuel. In some sections, the lack of water necessitates the use of gasoline drilling engine for power. Wells are flowed only to obtain necessary fuel; otherwise, they are not producing. There is no market for gas and no gasoline production worked out as yet; due to the lack of transportation facilities.

ECUADOR

The initial rate of flow in wells in Ecuador range from 10 bbls. to 200 bbls. per day, and the depth of wells from 200 feet to 3,600 feet. The operating companies own large tracts and there is no offsetting. The wells are spaced at least 100 yards apart.

Cable tools are used mostly, only about one-seventh of the wells being drilled by rotary. Steam is the only power used. The use of air compressors or natural gas is being considered.

POLAND

The trend in the Galician Fields for several years has been clearly in the direction of smaller output per well. Wildcatting operations during recent years have also been discouragingly unsuccessful, one company alone has expended more than $1,000,000 in exploration work in two years with practically no return on the outlay.

The present average cost of new wells in Poland ranges between $100,000 and $125,000. Some of the exceptionally deep wells (upwards of 4,500 feet), represent $200,000. It is not uncommon in the Galician Fields for rock intrusions several hundred meters in thickness to be encountered. This is one important reason why most of the companies still consider the use of rotary equipment as impracticable for that country.

The averate initial rate of flow, by districts, was as follows:

Drohobycz	17,700 kilos. per well per day
Jaslo	1,930 kilos. per well per day
Stanislawow	2,260 kilos. per well per day

The average depths of producing wells in the different fields, with shallowest and deepest depths, are shown in the following table:

District	Shallowest Well (meters)	Deepest Well (meters)	Average Depth For All Wells (meters)
Drohobycz	150	1,916	1,370
Jaslo	80	1,370	450
Stanislawow	167	1,600	1,000

The average distance between wells ranges from 60 to 110 meters in the major producing areas.

Drilling Methods

No authoritative data is obtainable showing the relative proportion of wells drilled by the rotary, cable tools or other methods. The so-called Canadian, or pole system predominates; but the Pennsylvanian, or cable, system has been extensively introduced into Poland during the past five or six years. Some companies are using what they call a Combination System, which embodies certain features of both the pole-tool and cable systems.

Steam is used more than any other medium of power in the Galician fields, although the use of electricity is also quite extensive, especially in the operation of producing wells. Gas and oil are also used to a considerable extent as a means of field power in the operation of internal combustion engines.

On May 1, 1928, there was only one free flowing well in Poland. This well came into production during March. It is not common for wells to "come away" with a free flow, and, on the rare occasions when they do, the flow does not last. With more than 2,000 producing holes and a total daily output equivalent to approximately 14,000 bbls., production per well is somewhat less than 7 bbls. daily.

The use of air compressors has not yet been employed in Poland to stimulate production, but the "gas lift" has been tried on a few wells in the Bitkow Field. If the results at Bitkow are satisfactory, no doubt the air and gas lift methods will be adopted in other fields.

There are at present in Poland 18 establishments for the extraction of casing-head gasoline. The stripped gas (after the gasoline has been extracted) is utilized for heating plants and combustion engines. There are as yet no chemical by-products manufactured from natural gas in Poland.

JAPAN

There are no official statistics in regard to drilling operations in Japan. The Nippon Sekiyu K.K. (Japan Oil Co.) controls from 95 to 98 per cent of the total production in Japan, and for that reason its statistics may be considered the most reliable. The number of wells drilled in Japan proper and Taiwan in 1928 was 368, of which 223 were producing wells and 45 dry holes.

The table showing depth, initial flow and gravity of several wells recently drilled by the Japan Oil Co. in Japan and Formosa follows:

Example	Initial flow (kilo litres)	Gravity (A.P.I. degrees)	Depth (meters)
A.	15.23	36.0	1,156
B.	44.9	41.6	1,143
C.	7.13	40.0	1,161
D.	16.71	39.5	1,148
E.	49.0	40.5	1,161
F.	15.75	39.0	1,588
G.	5.51	39.0	1,480

Depth of Wells

Generally the oil bearing strata in Japan proper are found very near the surface. The average depth of wells now in production is approximately 400 meters. Within the past few years deeper wells have been sunk in the hope of finding more productive strata. The deepest, according to officials of the Japan Oil Co., is 1,820 meters. The shallowest producing well is 50 meters.

The oil sands in North Sakhalien are very near the surface. Test borings have not gone below 180 meters.

Oil well spacing policy depends entirely on field conditions, particularly the depth and locations of the wells. In Japan proper it is generally necessary to sink wells at rather wide intervals since otherwise the new well would merely drain others already in production. This serves

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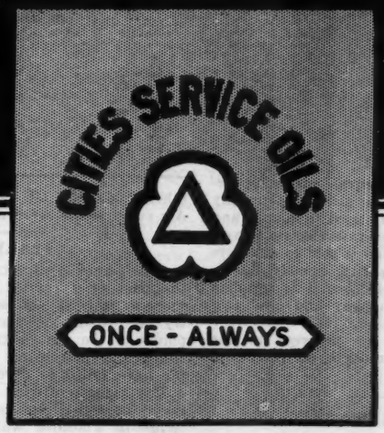

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no practical purpose since practically the entire productive area is controlled by a single company.

Drilling Methods

The relative proportion of various drilling methods in Japan and Taiwan follows:

	Percentage
Cable Tools	50
Rotary Drills	30
Spring Pole ("K azusa-bori.")	20

The Japan Oil Co. has the following drilling equipment: Rotary drills, 65; cable tools, 225; diamond drill, 1; spring pole equipment, 5.

There are about 3,500 active producing wells in Japan Proper and Taiwan, of which only 12 are free flowing, and the remainder being pumped. In addition there were 17 wells in production in North Sakhalien, all of which are being pumped since the pressure in this district is very low.

Neither gas or air compressors are now being used to stimulate production in Japan but the Japan Oil Co. is planning the installation of gas lift systems at a number of its wells. It does not contemplate the use of air lift.

The Japan Oil Co. is using both absorption and compression methods for the extraction of gasoline from natural gas. Details in regard to equipment follow:

Gasoline Recovery Plants
1. Compression Plants

Location	Daily Capacity (Cubic Feet)	Number of Motors	Ttl. H.P.
Nishiyama	3,000,000	6	750
Ohno	300,000	1	80
Yuri	900,000	3	275
Kurokawa	1,000,000	2	200
Hokkaido	300,000	1	80
Shukoko (Taiwan)	500,000	1	150

Location	No. of Absorber	Dimen. (Ft. & in.)	Max. Pressure Lbs. per sq. ft.	Max. Daily Cap. (Cu. Ft.)
Nishiyama	2	4'6"x30"	100	8,000,000
Nishiyama (for blending)	2	3'0"x30"	200	3,000,000
Takamachi	2	4'6"x30"	100	8,000,000
Shukoko (Taiwan)	1	4'6"x30"	100	4,000,000
Kinsui (Taiwan)	5	3'0"x30"	200	15,000,000
Kinsui (Taiwan)	6	3'0"x30"	100	

The following represents the production of natural gas by the Japan Oil Co. (the only important producer):

Natural Gas Production (October 31, 1927)

Field	Daily gas production (Cubic Feet)	Gravity	Gasoline content (Imperial gallons per 1,000 cu. ft.)	No. of wells producing gas
Nishiyama	2,553,000	0. 9-0.75	2-6	308
Takamachi	1,650,000	0. 6	0.2	2
Nittsu	1,173,000	0.65-0.75	0-2	190
Akita	1,810,000	0.60-0.80	0-4	713
Hokkaido	260,000	0.85	5	50
Shukoko (Taiwan)	1,280,000	0.85-" 05	1	16
Kinsui (Taiwan)	1,500,000	0.62	0.5	3
Total	10,226,000			1,282

The remaining natural gas after removal of gasoline is utilized primarily for fuel. It is being used in plants and in gas engines to generate electric power. A considerable portion is sold to distillers for fuel and in one city, namely Kashiwazaki, Echigo Prefecture it is supplied to the local gas company and used just as ordinary coal gas.

There has been no progress in the utilization of by-products of petroleum refining.

EGYPT

Petroleum is produced in Egypt at Hurghada and Abu Durba, on the coast of the Gulf of Suez. The crude product is transported by tank steamer to Suez, where it is refined. Drilling for petroleum is now proceeding in a few other areas on the Gulf of Suez, and on certain of the islands in the Gulf and the Red Sea. The oil field of Gemsa is now almost abandoned.

By far the greater portion of the production comes from Hurghada. Gasoline is obtained from the gas compression plant at Hurghada. Dehydrators are in use as the ratio of water to oil is increasing.

The depth of the producing wells is 100-250 feet at Abu Durba—all shallow wells; and an average of 1,700 feet at Hurghada—deep wells. The Government regulations require a minimum spacing of 40 meters. As a rough average, according to the director of the department of mines and quarries, 200 meters may be taken as the working distance between wells.

No rotary drills are used; all are percussion and steam. There are no free flowing wells. No use is made of air compressors or natural gas to maintain or stimulate oil well production.

The production of natural gas gasoline has been from well head gases collected at separators. No absorption plants exist for the extraction of well head gasoline. The methods in use are compression and refrigeration.

INDIA

On the properties of the Assam Oil Co. at Digboi the initial rate of flow of several producing wells has been 150 bbls. per day. The deepest well is 3,500 feet and the shallowest is 2,200 feet. The wells are spaced about 150 feet apart based on the geologist's calculations. Rotary drills have been employed exclusively at Digboi. Only steam power has been used with gas, coal and residue oil for fuel. There are two free flowing has been maintained at 150 bbls. a day. The Assam Oil Co. has been experimenting with natural gas to maintain or stimulate oil well production but these experiments have not yet been completed. The company intends to install an absorption plant for the extraction of casinghead gas. The production of gas is only about 500,000 feet a day which tests about 0.8 gallons (U. S.) per 1,000 feet. The remaining natural gas (stripped) will be used for fuel as there will be no other market for the product.

GERMANY

The initial rate of flow in wells in Germany is from 50 liters to 30 cubic-meter per day. The shallowest well is 100 meters, the deepest well 830 meters and the average depth 300 meters. The drilling method nearly exclusively used is the quick stroke process (Schnellschlagverfahren). In most cases electricity is used as oil field power; steam or internal combustion engines being used as oil field power. Only at two or three drillings the oil flowed freely; in all other cases the oil had to be pumped. Air compressors were not in use.

ITALY

Considerabe prospecting for oil has in the past been carried on in Italy and there is at least one section of the country in which the geological formation points to the possibility of commercially recoverable petroleum, but all efforts so far have failed to develop borings.

The highest official rate of flow was found in a well in the region of Montechio in Piacensa which ran about 46 bbls. per day, but in this as in all similar cases, the flow decreased rapidly and is maintained at about 2 bbls. per day.

The deepest producing well is also in the Montechio district, and in it oil was found at 1,163 meters. The shallowest producing well is 78 meters deep. The best producing horizon in the region of Piscenza where the most favorable geological indications are located, is found between 300 and 700 meters (Miocene).

All wells so far drilled in Italy have been by Canadian and Polish percussion cable and rod drills. So far no rotary drills have been used in Italy. There are only two free flowing wells in Italy, both being in the neighborhood of Montechio, and while they started at 46 and 19 bbls. per day respectively, they are now very much decreased. All other producing wells are being pumped.

No use has been made of air compressors or natural gas to manitain or stimulate oil well production.

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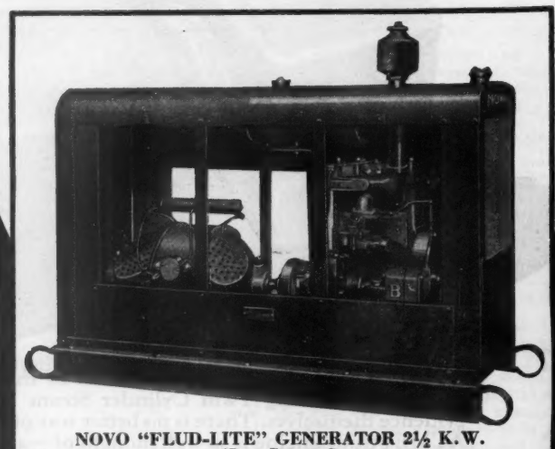

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NEW LOCATIONS

(Continued from Page 235)

NW cor. of Section 23, Block 33, Township 2-S, T.&P. Simms Petroleum Co.'s No. 2 R. C. Coffee, 1,650 feet south and 330 feet west of the NE cor. of Section 22, Block 33, Township 2-S, T.&P.

Hood County

Sampson Oil Co.'s No. 1 J. A. Ables, 2,200 feet south and 150 feet west of the most northerly NE cor. of the F. C. Cattonet Survey, being 450 feet north and 150 feet west of the SE cor. of their 80-acre lease.

Howard County

Continental Oil Co.'s No. 13 H. R. Clay-A, 1,980 feet south and 200 feet west of the NE cor. of Section 139, Block 29, W.&N.W.R.R.

Jack County

Panhandle Refining Co.'s No. 3 J. M. and W. E. Box, 270 feet north and 200 feet west of the southeast corner of the west 80 acres of the J. M. and W. E. Box 160-acre tract out of the Hughson Survey, A-256. Same company's No. 2 J. Leffel (Morrissey) "A," 330 feet north and 810 feet west for the southeast corner of the west 143 acres of the J. Leffel 227-acre tract out of the I Hughson Survey, A-256.

Jones County

Continental Oil Co.'s No. 1 W. L. Phillips, 440 feet north and 330 feet west of the NE cor. of the O. H. Pomroy 106.5-acre tract out of Section 16, Block 19, T.&P., being 440 feet north and 330 feet west of the SE cor. of the W. L. Phillips 80-acre tract.

Loving County

Lockhart & Co.'s No. 2 H. Lepp, 330 feet NE of the most northeasterly SW line and 676 feet NW of the SE line of Section 91, Block 1, W.&N.W.R.R.

Montague County

Continental Oil Co.'s No. 27 N. J. Howard, and others,' 450 feet north and 150 feet west of the SE cor. of the John Chambliss Survey A-123. Lesh & McCall's No. 1 R. W. Cunningham, and others,' 150 feet north and 450 feet west of the SE cor. of the L. B. Norton Survey A-574, being 150 feet north and 183 feet east of the SW cor. of their 30.54-acre lease. A. Tubbs, and others' No. 1 A. L. Reed, 150 feet north and east of the SW cor. of the A. L. Reed 102-acre tract out of Section 36, Belcher Subdivision.

Pecos County

Amerada Petroleum Corp.'s No. 1 University, 330 feet south and west of the NE cor. of the SE of the SW of Section 13, Block 18, University Land. Arkansas Fuel Oil Co.'s No. 1 University Land-A, 1,650 feet north and east of the SW cor. of Section 32, Block 16, University Land. The California Co.'s No. 6 M. A. Smith Lease 1, 250 feet south and 1,005 feet west of the NE cor. of Section 21, Block 194, G.C.&S.F. Stine & Griffith's No. 1 T. Michaelis and others, 1,320 feet north and east of the SW cor. of Section 9, Block 603, G.C.&S.F. Transcontinental Oil Co. and Arkansas Natural Gas Co.'s No. 1 Mrs. M. A. Smith, 330 feet north and 1,060 feet west of the SE cor. of Section 10 Block 194, G.C.&S.F. World Oil Co.'s No. 1 University-C, at the center of the NE of the SW of the NW of Section 7, Block 20, University Land. Hussman Oil Co.'s No. 1 S. J. Estes, 960 feet south and 300 feet west of the NE cor. of Section 83, Block OW, C.C.S.D.&R.G.N.G.

Shackelford County

Big States Oil Corp.'s No. 1 J. Macon, 1,176 feet south and 150 feet east of the NW cor. of the NE of the W. Woodward Survey No. 50. Callahan & Carter Development Co.'s No. 1 A. A. Clark, 150 feet north and west of the SE cor. of the N 58 acres of the NW, Section 2, Blind Asylum Land. Coleman & Stiles, and others' No. 1 A. A. Clark, 450 feet south and 150 feet east of the NW cor. of the SE of the NE of Section 2, Blind Asylum Land. Cranfill & Reynolds' No. 2 J. B. Matthews, 150 feet north and west of the SE cor. of the NE of Section 31, Block 10, E.T.R.R. Hart & Gist, and others' No. 3 A. A. Clark, 650 feet south and 557 feet west of the NE cor. of the NW of the NE of Section 2, Blind Asylum Land. Holder & Buddrus' No. 1 C. R. Compton, 1,509 feet north and five feet west of the SE cor. of Section 49, Blind Asylum Land. F. W. Holder, and others' No. 2 I. N. Jackson, 150 feet north and east of the SW cor. of the NW of the NW of Section 68, Block 11, T.&P. Merrick & Lamb's No. 5 J. B. Matthews-B, 495 feet south and 802 feet west of the NE cor. of the NE of the SE of Section 32, Block 10, E.T.R.R. McClintock & Griffith's No. 1 J. N. Davis, 1,270 feet south and 550 feet east of the NW cor. of Section 1,542, T.E.&L. S. B. Owens, Inc., and others' No. 3 Morris & Buie, 150 feet south and west of the NE cor. of the NW of Section 190, Block 10, E.T.R.R.

Throckmorton County

F. C. Clark's No. 1 John Gaither, 150 feet north and 650 feet east of the SW cor. of the N half of the E 155 acres of the John Gaither 235-acre tract out of Section 2, Day Land & Cattle Co. Survey A-1,262. Swenson Oil & Gas Co.'s No. 1 Swenson Land & Cattle Co., 2,000 feet north and four feet west of the SE cor. of Section 173, B.B.B.&C.

Upton County

Snowden & McSweeney's No. 3 Ed S. Hughes Co., 330 feet north and east of the SW cor. of their 80-acre lease out of the William Teer Survey No. 4, A-806.

Ward County

Alpine Oil & Development Co.'s No. 1 A. R. Dakan, 228 feet southwest of the NE line and 150 feet northwest of the SE line of the SE 10 acres of the SW 40 acres of Section 11, Block 5, H.&T.C.

Wichita County

Humble Oil & Refining Co.'s No. 27 A. J. Schultz, 3,100 feet south and 1,100 feet east of the NW cor. of Section 6, H.T.&B., A-480. Arkansas Fuel Oil Co.'s No. 36 Kemp & Kempner-B, 1,200 feet south and 150 feet east of the SW cor. of Block 81, Kemp Wichita Valley Land and located in Block 82. Same company's No. 37 Kemp & Kempner-B, 1,325 feet south and 1,400 feet west of the NE cor. of Block 82, Kemp Wichita Valley Land. Bateman & Dingee's No. 1 E. J. Taylor, 2,130 feet south and 150 feet east of the NW cor. of the E. J. Taylor 128.8-acre tract out of James Cole Survey A-37. Hamer & Chilton's No. 1 W. F. Hamilton, 1,050 feet south and 4,200 feet east of the NW cor. of the E. Durain Survey A-53. W. H. Hammon's No. 1 T. F. Mitchell-B, 190 feet south and 150 feet east of the NW cor. of Section 24, T. F. Mitchell Subdivision, P. Castleman Survey, A-37. Sheldon and Ven-Mex Oil Co.'s No. 2 M. M. Robinson, administrator, 150 feet north and 450 feet east of the SW cor., Section 310, Waggoner Colony Subdivision.

Wilbarger County

L. G. Bradstreet Co.'s No. 6 W. T. Waggoner-C, 600 feet north and 1,150 feet west of the SE cor. of their 100-acre lease "C" out of Section 31, Block 4, H.&T.C. Empire Gas & Fuel Co.'s No. 20 W. T. Waggoner-A, 262 feet north and 205 feet east of the SW cor. of the NW of Section 32, Block 4, H.&T.C. Same company's No. 21 W. T. Waggoner-A, 305 feet south and 762 feet west of the NE cor. of the SE of the NW of Section 32, Block 4, H.&T.C. Same company's No. 29 Waggoner-B, 560 feet north and 589 feet east of the SW cor. of the NW of the SW of Section 32, Block 4, H.&T.C. Fain-McGaha Oil Corp.'s No. 17 W. T. Waggoner-L, 650 feet south and 205 feet west of the NE cor. of their 200-acre lease "L" out of Section 31, Block 4, H.&T.C. Golding & Cochran, and others' No. 7 Waggoner-H, 2,600 feet north and 205 feet east of the SW cor. of Section 33, Block 4, H.&T.C. Stidham & Thrasher's No. 1 B. A. Bywaters, 150 feet north and east of the NE cor. of Section 26, Block 13, H.&T.C. and located in Section 28. The Texas Company's No. 23 W. T. Waggoner-E, 620 feet south and 1,115 feet west of the NE cor. of Section 25, Block 4, H.&T.C. Same company's No. 24 W. T. Waggoner-E, 245 feet north and 205 feet east of the SW cor. of the NE of the NE of Section 25, Block 4, H.&T.C. Same company's No. 25 Waggoner-E, 165 feet

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south and 205 feet east of the NW cor. of the SE of the NE of Section 25, Block 4, H.&T.C. Same company's No. 3 Waggoner-F, 950 feet south and 150 feet east of the NW cor. of Section 9, Block 5, H.&T.C.

Young County

Nicks & Stump's No. 1 J. D. Carpenter, 150 feet north and west of the SE cor. of the W half of Section 164, T.E.& L. Jerkins & Cullum's No. 2 E. Deitrich, 150 feet south and 450 feet east of the NW cor. of the E. Deitrich 145-acre tract out of the G. W. Stell Survey A-256. Perkins & Cullum's No. 3 E. Deitrich, 450 feet south and 150 feet east of the NW cor. of the E. Deitrich 145-acre tract out of the G. W. Stell Survey A-256. Petroleum Production Co.'s No. 1 J. D. McCarry, 747 feet north and 150 feet east of the SW cor. of the E 100 acres of the W 210 acres of Section 410, T.E.&L. E. R. Riggs' No. 1 P. J. Keeter, 150 feet south and east of the NW cor. of Section 150, T.E.&L. Sorrels & Jackson's No. 1 W. F. Keathley, 150 feet south and west of the NE cor. of the SW of Section 152, T.E.&L. Sun Oil Co.'s No. 16 O. Deitrich, 1,050 feet south and 150 feet west of the NE cor. of their 114-acre lease out of Section 4, B.B.B.& C. Sun Oil Co.'s No. 17 O. Deitrich, 1,350 feet south and 150 feet west of the NE cor. of its 114-acre lease out of Section 4, B.B.B.&C., A-1,700. Wise & Porterfield's No. 4 F. M. Cullers, 450 feet north and west of the SE cor. NE SW, Section 2, C.T.R.R. Mid-Tex Oil & Gas Co.'s No. 4 Childress & Donnell, 200 feet south and west of the most easterly NE cor. of the J. A. Morgan Survey A-1,817. C. A. Pennell's No. 1 J. H. McLaren, and others,' 2,600 feet north of the SE cor. and 2,850 feet west (at the right angle) of the east line of the J. H. McLaren, and others' 877.6-acre tract out of the John Conner Survey, A-57. Texas Pacific Coal & Oil Co.'s No. 7 G. L. Donnell, 1,510 feet south and 932 feet east of the NW cor. of Section 1,211 T.E.&L.

Corrections

Coleman County: Kidney-Kamon and Western Exploration Co.'s (formerly S. C. Yingling) No. 1 J. Pfluger, 150 feet south and 150 feet east of the northwest corner of the W. Skurlock Survey, No. 280.

Brown County: A. B. Gordon and others' No. 5 S. B. Cannon-A, 150 feet north and 750 feet west of the southeast corner of his 40-acre lease "A" out of the W. Ahrenbeck & Brothers Survey, No. 3, A-20.

Reagan County: Big Lake Oil Co.'s No. 108 University, 1,320 feet north and 400 feet west of the SE cor., Section 2, Block 2, University Land. Same company's No. 124 University, 400 feet north and 1,720 feet west of the SE cor., Section 2, Block 2, University Land. Same company's No. 167 University, 1,320 feet north and 400 feet east of the SW cor., Section 1, Block 2, University Land. Same company's No. 179 University, 660 feet north and 660 feet west of the SE cor., Section 10, Block 2, University Land.

Young County: Madden & Junker's No. 1 H. O. Kunkel, 810 feet north and 150 feet west of the southeast corner of the east 43.5 acres of the H. O. Kunkel 252-acre tract out of the G. W. Stell Survey, A-256.

Wilbarger County: Melat Oil Co.'s No. 6 Waggoner-A, 2,432 feet north and 150 feet west of the SE cor., Section 10, Block 4, H.&T.C. Survey.

PRODUCTION IN SOUTH AMERICA SHOWS GAIN

(Continued from Page 114)

of New Jersey) has completed a 2,000-bbl. topping plant at Maracaibo City, this plant now being in operation. The output of this refinery is being sold locally and in the Caribbean area, and part of the production is being used to supply the company's own requirements in Venezuela.

West India Oil Co. also started operations at a small plant at La Brea, Trinidad, this year. The refinery, with throughput of 500 bbls. daily, has been in operation for the past few months, and has been constructed to permit of enlargement as required. The output of this refinery is also being sold locally.

Venezuelan Royalties, Inc., is reported constructing a 10,000-bbl. topping plant on the Paraguana Peninsula which will be completed some time in 1930. This plant will be later enlarged to 20,000 bbls. daily capacity through the installation of Dubbs cracking equipment.

One or two other refinery projects in Venezuela are understood to be under consideration, although nothing definite has developed in this connection. The economies which may be effected in refining the crude close to the source of supply, however, are understood to be receiving serious consideration by several large companies, with the probability of additional refinery construction close to the fields within the next several years.

Production Growth

Production of crude oil in Venezuela during the first ten months of the year, according to O'Slaughnessy's South American Oil Reports, has aggregated 113,148,338 bbls., against 84,507,207 bbls. in the corresponding months of 1928. Detailed data appear in Table 1.

Shipments Increase

Shipments from Venezuela for the first ten months of 1929 have totaled 101,442,486 bbls., compared with 80,945,790 bbls. in the same months of 1928. With shipping facilities adequate to handle the production of practically all of the important Venezuelan pools, producers have been moving their own into consuming channels in a larger way this year. Detailed data on shipments by the principal companies for the first ten months of the year, with comparisons for the corresponding months last year, appear in Table 2.

New Fields

Four new fields in Venezuela, which have been under development during the current year, are expected to be shipping crude by the middle of 1930.

The Tarra Field in Colon, which has been under exploitation for the past two years, is expected to find its way into the production and shipping column first. This field, owned by Colon Oil Corp. (Royal Dutch) produces crude of about 32 degrees gravity, and has already developed a fair amount of production, which has been shut in thus far. An 8-inch pipe line has been laid from the heart of the field to Lake Maracaibo for trans-shipment to Royal Dutch refineries by shallow-draft lake tankers. Steel storage for approximately 320,000 bbls. of crude has been constructed in the field.

The Urumaco field development work is also progressing steadily and it is expected this area will be producing and shipping in fairly large quantities by the second half of 1930. Control of this field is held jointly by Standard Oil Co. of California, Sun Oil and Beacon Oil, the field producing oil averaging 35 degrees gravity. The oil will be moved by a pipe line to a terminal at Cauca.

Standard Oil Co. of New Jersey, through its Venezuelan producing subsidiary, Creole Petroleum, controls the Quirequire Field, which has aroused considerable interest. This field produces fairly high-grade oil and will also come in in a fairly large way during 1930. The company is expected to build a pipe line to the San Juan River and a shipping terminal on the river, which is sufficiently deep to permit of navigation by ocean-going tankers.

The Menecito-El Mene Field, which has been developed by the North Venezuelan Petroleum Co. and Tucoyo Oilfields (Ven.) Ltd., is expected to come in during the latter part of 1930. Production from this area will be shipped via pipe line to Chichiceviche, about 25 miles distant.

A number of new companies, including two large and reputedly well-financed French concerns, have entered Venezuela during the year in an effort to develop additional production in that country.

Considerable Wildcatting

Considerable wildcatting by most of the leading companies has been in prog-

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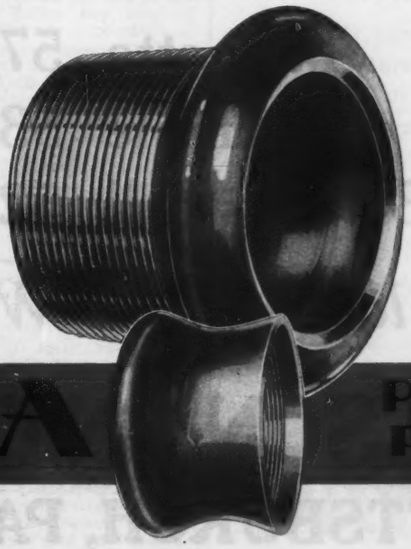
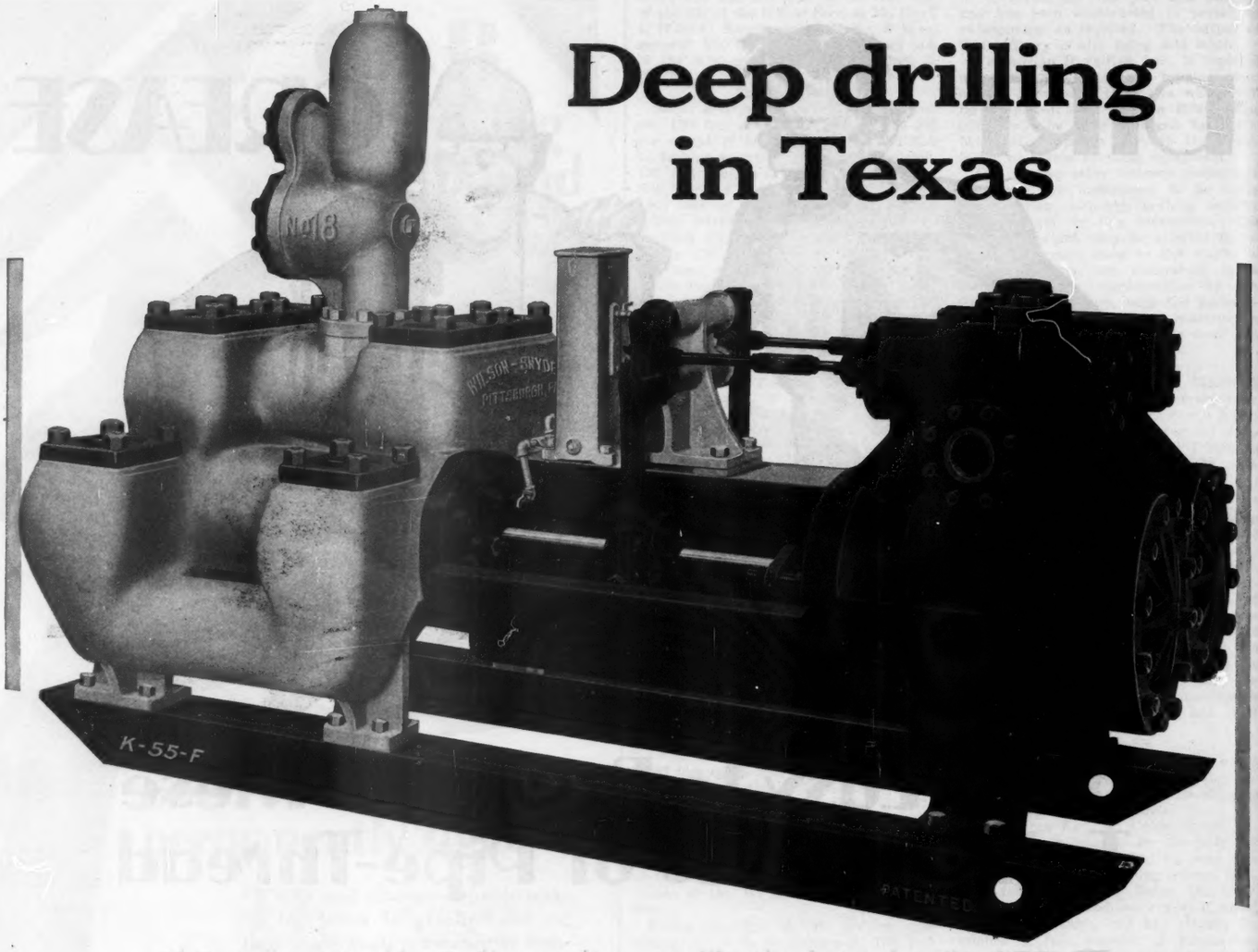


COLONA PIPE THREAD PROTECTORS

Deep drilling in Texas



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Humble	5340	"
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ress in Venezuela during the year, in the effort to determine the boundaries of previously proven areas. In most instances, these wildcatting operations have proved successful and the zones of proven production have been materially widened.

Standard Oil Co. of Bolivia has been engaged in exploratory work on its 2,500,000-acre concession in Southeastern Bolivia and is reported to have proved up four producing areas. The company has drilled a number of wells on the concession and is still carrying on exploration work. Two 50-bbl. topping stills were installed to provide gasoline for motor transport and fuel oil for drilling.

There were no developments of outstanding importance in the situation in Argentina. The Government petroleum company is doing a growing volume of business, but the administration's petroleum nationalization scheme has not as yet proved fully successful.

The president of Uruguay has disapproved a resolution by the national council providing for the construction of a refinery at Montevideo. The Sociedad Uruguaya de Combustibles S. A. has been formed at Montevideo for the importation, exporting, sale, refining and distillation of crude petroleum and its products, and plans for a refinery are understood to be under way at Rocha.

At last reports, Colombia had not yet enacted its new petroleum legislation and development work in that country by most foreign companies was still being delayed. Although the oil companies succeeded in having a number of the more drastic provisions of the petroleum bill eliminated or modified, the measure, in its final form, still falls far short of a satisfactory statute insofar as outside development is concerned.

Colombia and Peru

Production of principal companies operating in Colombia, Peru, Trinidad and Ecuador, for the first nine months of the year (detailed data beyond September 30 are not available at the time of writing) has been as follows:

Company	Country	Bbls of 42 U. S. gallons, First nine months 1929	1928
International Petroleum	Colombia	15,165,241	14,888,078
International Petroleum	Peru	8,074,468	6,466,980
Lobitos Oilfields	Peru	1,920,724	1,803,778
Apex Trinidad	Trinidad	2,234,890	1,597,190
Trinidad Leaseholds	Trinidad	2,004,100	2,245,950
United British	Trinidad	549,128	351,963
General Asphalt	Trinidad	156,879	238,373
Kern River	Trinidad	249,779	236,463
Anglo-Ecuadorian	Ecuador	1,011,773	714,629
B. C. O., Ltd.	Trinidad	564,292	196,796
Venezuelan Consolidated	Trinidad	179,675	40,080
Trinidad Oilfields	Trinidad	233,397	.....
	Totals	32,344,376	28,780,280

Imports of Gasoline

A heavy gain in imports of gasoline from the Dutch West Indies has developed this year, due largely to the entry of Shell into the Gulf and Atlantic Coast markets, and the starting up of operations of Pan American at its Aruba, D. W. I., refinery. Imports of gasoline into the United States from the Dutch West Indies during the first nine months of the year were 5,058,643 bbls., more than double the 2,481,732 bbls. imported during all of 1928. Detailed figures on imports follow:

	Bbls. of 42 U. S. Gals. 1929	1928
January	393,268	294,294
February	253,913	286,624
March	236,124	155,964
April	660,690	293,488
May	651,827	260,472
June	657,226	77,168
July	841,517	116,224
August	647,035	246,465
September	717,043	77,320
October	.....	216,769
November	.....	203,145
December	.....	233,819

Further gains in imports of gasoline refined from Venezuelan and other South American crudes are looked for during 1930, with the probability that South American gasoline will rival the California product in East Coast, and possibly Gulf, markets by the end of the coming year.

Refining in West Indies

Development of South American oil production has made the Dutch West Indies an important refining center in recent years. The refinery of the Curacaosche Petroleum Industria Mij. (Royal Dutch-Shell) has been in large scale operation since 1920, having doubled its output of refined products several times until the plant now has aggregate capacity of 175,000 bbls. of refined products per day, being credited as the largest refinery in the world. For the three months ended October 31, last, the plant averaged 5,200,000 bbls. of refined products per month. This refinery has in operation between Curacao and Maracaibo 37 lake tankers of 2,000 tons each and 11 tankers, on the average, enter from Maracaibo daily and discharge about 25,000 tons of crude. Nine of these small tankers can unload at the refinery piers simultaneously. The main refinery can load six large ocean-going tankers simultaneously. A new loading terminal has recently been completed at Caracas Bay, 11 miles east of the refinery, where four piers have been constructed for loading ships with fuel oil and for bunkers. Additional terminal facilities are now under construction at Bullen Bay, 11 miles west of the refinery, which will enable the loading, simultaneously, of three ocean-going tankers. This new terminal will be reserved for tankers loading benzine or gasoline. At the present time, an average of 65 ocean-going tankers load each month at the refinery.

According to a report to the Department of Commerce, "The bunkering of ships has become a large item in the operation of the refinery. In August 450,000 bbls. of petroleum products were furnished to ships for bunkering purposes. The price now charged for fuel oil for bunkers is 92 cents per barrel, but a price of 83 cents a barrel is made to ships on contract."

The refinery proper has in operation 5 large pump houses handling various products for loading and unloading the vessels, and for pumping oil into storage. One large pipeline runs to Caracas Bay, with two lines being constructed to Bullen Bay—one 8-inch line for gasoline and one small 2-inch line for water ballast.

Storage Facilities

There are 487 storage tanks at the refinery proper, the majority of which are of 76,500-bbl. capacity. At Caracas Bay, there are 37 tanks for fuel oil and water and the Bullen Bay terminal, when completed, will have 28 additional tanks for gasoline and water. The storage capacity of all of these tanks is estimated at 7,500,000 bbls. of petroleum products, aside from storage for sulphuric acid and other materials.

Practically all of the equipment and machinery used at the refinery is of Dutch manufacture. Practically all of the tanks installed in the past two years have come from Holland, although many of those used in the earlier days at the plant came from the United States. All of the automotive equipment used is of American mnaufacture, as is a small narrow gauge railroad system in use at the plant.

The Pan American refinery at Aruba has a fleet of 20 small lake tankers transporting its crude from Lake Maracaibo, with an average of 6 tanker arrivals at the plant daily, carrying between 80,000 and 90,000 bbls. of crude oil. An average of 40 ocean-going tankers per month is now loading at the Pan American refinery, all shipments going to the United States. Bunkering is done at two deepwater berths and at nine shallow-draft works. At last reports, gasoline, kerosene, Diesel and fuel oils were be-

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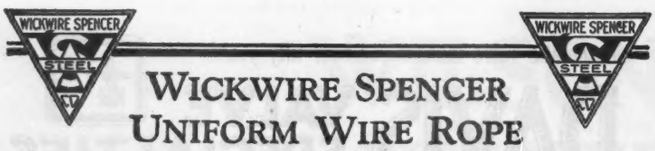

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ing turned out by Pan American's Aruba plant, which is not yet in full operation. When construction is completed, there will be 16 stills in operation. Of the 95 tanks completed at last reports, 4 were being used for sulphuric acid and the balance for crude and refined petroleum. The plant will have 115 tanks when the construction program is completed. Present storage capacity at the plant is 5,500,000 bbls.

A summary of refinery capacity in the Dutch West Indies, Mexico and South America follows:

Venezuela

Venezuela, at last reports, had refinery capacity aggregating 281,000 bbls. daily, largely represented by Royal Dutch and Pan American. Distribution of this refining capacity was as follows:

Location—	Owner	Capacity Bbls. (42 U. S. Gals.)
Curacao	Royal Dutch	140,000
Aruba	Eagle (Ryl. Dth).	14,000
Aruba	Pan American	110,000
San Lorenzo	Royal Dutch	10,000
La Salina	Lago (Pan Amer.)	2,000
Cabimas	Gulf	2,000
Maracaibo	Creole (S.O.N.J.)	2,000

The small 2,000-bbl. refineries are principally for the refining or topping of crude to supply fuel requirements of the local operations of the companies.

Colombia

Colombia's refining capacity is limited to the 7,000-bbl. refinery of the Tropical Oil Co.

Mexico

Only part of Mexico's refining capacity is now in operation, three plants, with aggregate daily capacity of 87,000 bbls., running. These are Aguila (Royal Dutch), 50,000 bbls.; Huasteca (Pan American), 32,000 bbls., and Waters-Pierce, 5,000 bbls. daily.

Peru

Peru's refining capacity is limited to the International Petroleum refinery, which has daily capacity for 13,000 bbls. of crude.

Argentina

Argentina now has refining capacity aggregating 42,000 bbls., reflecting the efforts which the Argentina Government has been making to develop home refining through Y. P. F. Refineries now operating in the Argentine include the following: Y. P. F. (3 refineries), 20,000 bbls. daily capacity; British Railways, 8,000 bbls.; S.O.N.J. Compana, 8-000 bbls.; S.O.N.J. Bahia Blanca, 1,600 bbls.; Itica, 2,000 bbls.; and Astra, 2,400 bbls.

Trinidad

The refining capacity of Trinidad comprises plants capable of handling 26,000 bbls. daily. Trinidad Leaseholds has the principal plant, with 20,000 bbls. daily capacity, with United British (Royal Dutch) ranking second with refining capacity of 5,000 bbls., and West India Oil Co., subsidiary of Standard Oil Co. of New Jersey, having a 1,000-bbl. plant on the island.

Ecuador

The refining capacity of Ecuador is negligible, representing but 250 bbls. daily of the 4,000 bbls. daily proudction for the country as a whole.

Brazil

Brazil has neither crude production nor refining industry, obtaining its petroleum products from the United States, Venezuela, Peru and Mexico, ranking in importance in the order named.

Chile

This country likewise lacks both production and refining, deriving its supplies principally from the United States, although Peru and Mexico also ship limited quantities of refined products into Chile.

Mexico

Mexico has continued to lose ground as a world factor in the petroleum market during the current year, both production and exports showing further declines. Production for the first 11 months of 1929 approximated 33,471,510 bbls. Exports during the first 10 months aggregated about 23,539,287 bbls.

Field work in Mexico during the year has been along greatly restricted lines, principal companies in most cases greatly curtailing operations, and one or two showing indications of a tendency to suspend entirely in Mexico.

Overproduction of crude oil in Venezuela and the United States, particularly in heavy oil, naturally created an adverse effect upon the Mexican oil situation, while continuance of relatively high production and export taxes in that country likewise reacted against the market for Mexican petroleum.

During the latter part of the year a sharp price advance featured the market for Panuco crude, prices of which jumped approximately 20 cents per barrel This oil came in for heavy buying for shipment to both the United States and Europe, being much in demand because of its heavy asphalt content. Considerable 1930 business has been booked, and the outlook for this oil is slightly more favorable.

Production Figures

Statistics on Mexican petroleum production for the 11 months of the year follow:

January	3,204,585
February	2,850,857
March	3,098,329
April	3,055,947
May	3,023,393
June	2,942,354
July	3,173,213
August	3,257,832
September	2,852,000
October	2,729,000
November	3,283,000
Total	33,471,510

Export Record

Exports naturally reflected the falling off in production during the current year. Detailed data on exports, by companies, for the first 10 months of 1929 are given in Table 3.

Leading American companies operating in Mexico have given no indication of any change in policy with respect to their activities in that country, and, barring some sudden unlooked-for change in the world oil situation, it is expected that Mexican operations will show further declines during 1930.

GAIN IN REFINERY ACTIVITIES ABROAD

(Continued from Page 118)

been temporarily abandoned in consequence.

A refinery has been recently placed in operation in Sweden by a Stockholm company to treat crude petroleum from the Mexican Gulf district for the production of gasoline, kerosene, fuel oil and asphalt. At present it is handling about 100 tons of crude a day. The refinery is located about 40 miles from Stockholm. It uses the high pressure cracking process.

Until 1927 the Iraq market had been largely supplied with gasoline and kerosene in cans, some of the kerosene coming from America and the balance of the kerosene and all of the gasoline from the Abadan refinery of the Anglo-Persian Co. With the opening of the refinery at Khanaqin and the taking over of the Iraq market by the Khanaqin company, there was inaugurated a policy of opening filling stations both for automotive vehicles and river motor craft.

Italy's Refinery

There seems to be no apprehension of reduction in the number of workers in the Italian Mineral Oil Refinery at Trieste, which is developing rapidly despite considerable domestic and foreign competition. The price war at the beginning of 1928 ended in June, when all competitors agreed on an increase. The Trieste refinery continued to produce in spite of the fact that the high cost of raw material from South America and the United States caused a loss of more than 6,000,000 lire, covered from the reserve fund. The prospects of this industry are improving with the firm tendency of the home distribution market. The movement of crude, lubricating oils and other products in 1928 amounted to 243,340 metric tons, compared with 230,083 in 1927 and 192,751 in 1926. As the total movement in 1913 was only 104,124 tons, it is evident that the local industry is well on the way to compen-

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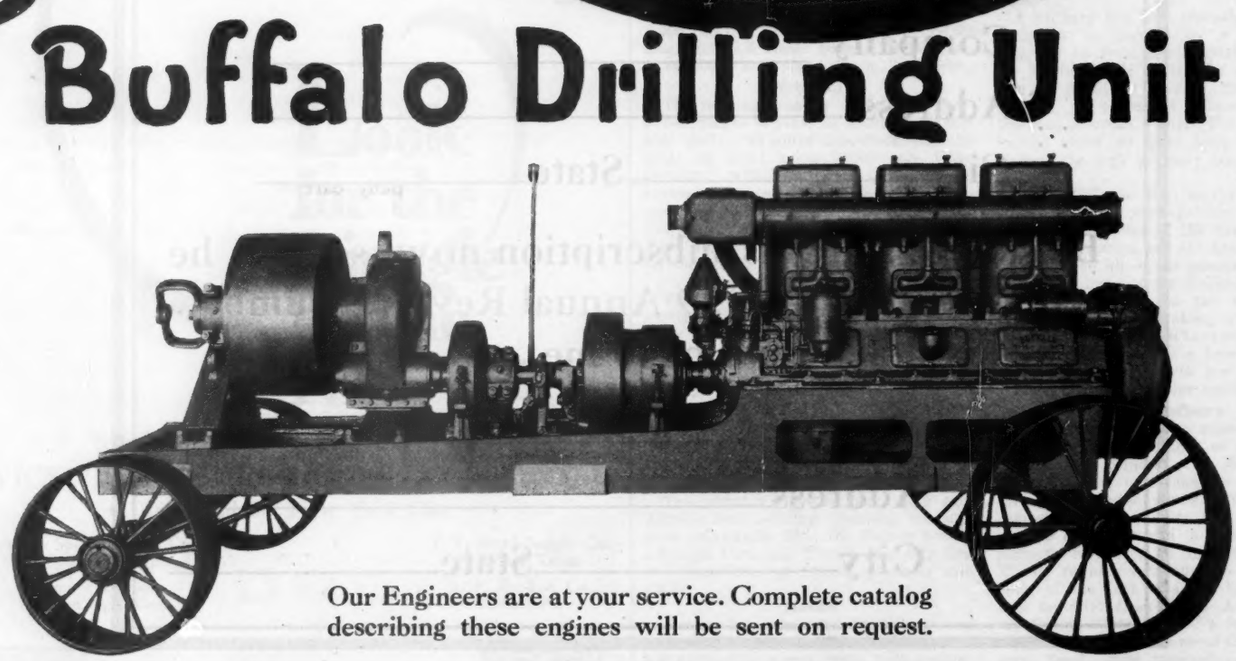

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sate for losses in other branches of the Trieste trade.

A Danish stock company has recently been formed to take over the oil refinery of a defunct company. This plant, one of the two existing Danish petroleum refineries of a defunct company, will now begin operations again.

Royal Dutch Plants

The Royal Dutch Co. has decided to build a new refinery on the island of Csepel, near Budapest. Operations are to be by the Batavian Petroleum Co. and the capacity is estimated at 360,000 bbls., covering 30 to 35 per cent of Hungary's total consumption. The Societe Maritime des Petroles, French subsidiary of the Royal Dutch, has established a refinery near Rouen, with an annual capacity of over 1,000,000 bbls.

The program for port and harbor expansion at Dunkirk, France, has recently been extended to include the erection of a petroleum refinery. Arrangements have been completed whereby the Raffinerie de Petrole du Nord, with the collaboration of the local chamber of commerce, is authorized to establish the new plant. This plan is an effect of the new French regulations regarding the importation of refined petroleum products, long an important item of receipt at this port. It is now considered more advantageous to treat the crude than to import the finished products. The proposed plant will have an initial capacity of 350,000 tons of petroleum to be increased to 500,000 tons soon. Storage facilities will provide for 125,000 tons of petroleum and 200,000 tons of products.

The press reports that Swedish-controlled factory for fuel oil in Estonia has shut down on account of the high corporation and gasoline taxes levied on the enterprise, which was experimental in intent. The plant has been in operation for a year, producing gasoline and heavy oils and selling to the domestic market and in Sweden and Finland. Difficulties have been met in disposing of the heavy oils, of which large quantities are now held in storage. A resumption of operations is not to be expected soon.

Japan to Refine American Oil

The press reports that the Mitsubishi interest in Japan will organize a company in co-operation with an oil company of the United States with the object of importing American crude oil into Japan and refining it at a plant to be constructed, probably at Tsurumi, a suburb of Yokohama. This refinery will consume about 2,000 bbls. of crude daily.

A company known as the Nihon Benzine Co. has been floated by the Shiina interests of Osaka to produce gasoline from American crude by the Dubbs process, for which this company holds the patent right in Japan.

Operations in Germany

Colas Kaltasphalt Gesellschaft mit Beschraenkter Haftung, with works in Dresden, Cologne and Aschaffenburg, has recently completed a large capacity petroleum-asphalt works at Harburg Wilhelmsburg, near Hamburg. The plant treats the petroleum-asphalt produced by the neighboring new Rhenania-Ossag plant (Royal Dutch-Shell), which is led continuously in 700-meter mains to the Colas factory. The latter finishes about 1,000 tons of cold asphalt daily. The new plant is well located to supply a growing demand from Hanover Province. It has been planned to permit extensions. The new production obviates supply to Colas company of drum-packed asphalt. It is shipped direct from the Colas works, which has 200 railway tank cars of 15 tons capacity each.

By-Product Processes

In April, 1928, the South Manchuria Railway Co. started the construction of a shale oil distillation plant at its Fushun Collieries. The plant, consisting of a battery of 80-50 ton (metric) retorts with the necessary equipment for handling materials and recovering by-products, will treat 1,200,000 tons of shale annually, which is estimated to yield 42,000 of high grade fuel oil, 4,200 tons of coke residual, 9,000 tons of paraffin and 18,000 tons of sulphate of ammonia. The special feature of the Fushun system is a low temperature combined shale distillation and gas producer. The estimated cost of the whole plant is 10,000,000 yen ($4,650,000). It is expected to be in operation before the end of the current year with a trial operation in October.

The new German oil-from-coal plant, A. G. fuer Kohleverfluessigung und Kohleveredlung, which went into production at Duisburg Meiderich June 1, 1929, suffered an explosion on June 28 which caused it to suspend operations until repaired. Production is not expected to be resumed before December.

This new plant is said to operate the Bergius patents, differing from the processes at the Leunawerke, where it is understood the lignite is gasified and the resultant carbon monoxide and hydrogen synthesized catalytically to gasoline. Bergius, it will be recalled, hydrogenates coal dust, and does not use a catalyst.

The Duisburg plant announces a capacity of 30,000 metric tons light oil annually. It calculates to turn out a product resembling Aral, the German benzol cartel's mixture, with 50 per cent each of gasoline and benzol. It employs 150 workmen, who were not dismissed during repair operations.

In Portugal

It is reported that on October 11, 1929, there was formed at Lisbon, Portugal, a corporation under the name "Cia. Industrial Luso-Americana" with capital of 5,000,000 escudos "entirely paid in." It was declared in Article 4 of the constitution of the corporation that the board of directors is authorized to raise the capital to 20,000,000 escudos when necessary.

In the government bulletin of October 19, 1929, there was published the order permitting the transfer to this corporation of the "patent for introduction of new industry 'distillation of crude petroleum for the production of its derivatives, gasoline, paraffin, illuminating oils, combustibles and lubricating oils.'"

Refining in Russia

Among the many refining plants either put into operation by Soviet trusts in the past two years or now nearing completion may be mentioned the following:

By Azneft—a refinery at Baku, to treat 250,000 tons of mazut annually, cost $1,600,000; a pipe still for kerosene and gasoline, each to treat 350,000 tons of mazut annually, cost $1,000,000; Vickers cracking installation, to treat 250 tons of mazut daily, cost $525,000; refineries at Batum, to treat from 2,600,000 to 2,800,000 tons of oil annually, cost $13,000,000; pipe still of Pintsch and Wilcke system, to treat 1,200 tons of oil daily, cost $450,000; five cracking installations at Batum, etc.

By Grozneft—paraffin plant at Grozny, annual capacity 6,700 tons of paraffin, cost $1,800,000; two batteries of 15 stills each, to refine 1,000,000 tons of oil per year, total cost $1,250,000; Vickers cracking installation, cost $650,000; six cracking installations at Tuapse and Grozny; refinery at Tuapse, to treat 1,100,000 tons of oil annually.. two pipe stills, each to treat 300,000 tons of oil per year, total cost $700,000; compression gasoline plant to produce 19,000 tons of gasoline per year; Graver pipe still at Grozny, etc.

A large part of the imported machinery employed in the Soviet oil industry in the past few years has been purchased from American manufacturers. In the past three years purchases by the Amtorg Trading Corp. of American oil equipment amounted to $15,700,000, more than 60 per cent of which was expended during the past year.

The frequent visits to this country of Soviet engineers and oil executives for the purpose of studying the American oil industry have undoubtedly contributed to the popularity of American equipment in the U. S. S. R. At the present time a number of engineers and foremen are working in American oil enterprises for the purpose of familiarizing themselves with the latest developments in technical methods.

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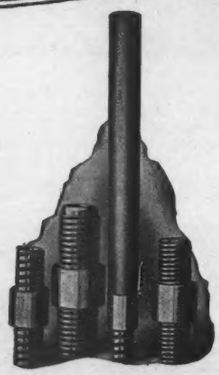

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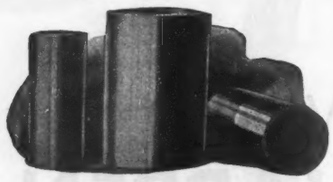

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LITTLE KNOWN ABOUT PERSIAN DEVELOPMENT

(Continued from Page 135)

for a considerable distance, covering the one common reservoir of oil. There is considerable gas pressure.

Owing to the unusual surface formations, it is evident that prospecting in Persia is "wildcatting" in the fullest sense of the word, although geophysical activities as a supplement to geological work have helped. The company is utilizing the Eotvos torsion balance in determining subsurface structure. Seismological research is also utilized in this connection.

Anglo-Persian has found, in its main field, that wells up to 3,000 feet are economically drilled by cable tools, but for wells of a greater depth, the rotary is used. The company is systematically coring the field as it extends the producing area.

In the early stages of Persian production development, gas production was piped to distant spots in the hills and burned. Now, however, the company is using high pressure gas separators at the well heads. The gas is purified and conducted through mains to the field gas supply depot for industrial and domestic use. Considerable of this gas is used in drilling operations, and it also fuels the boilers at the company's shops and pumping stations. Low pressure gas is being utilized in gas absorption plants. The company has a carbon black plant in operation in the field, and is likewise producing a number of chemical products from its gas output. The company maintains a complete chemical research laboratory in the field. Important cracking experiments are also being carried out by the company's research staff in Persia.

Pipe Line Problems

The pipe line from the main field, running from Tembi to Abadan, is approximately 135 miles long. The line crosses two ridges, the Imam Raza, at a height of 1,366 feet, and Tul Khayaat, 1,308 feet above sea level. Tembi itself is 618 feet above sea level. The wide variation in temperature is responsible for numerons pipe line maintenance problems, the pipe being curved at suitable places to enable it to take up expansions and contractions without fracture. The company's main pumping station at Tembi, it is claimed, is unexcelled, if equalled, by any other oil pumping station in the world. The pumps at this station discharge the oil at a pressure of 600 pounds to the square inch, driving it as far as the next pumping station at Mulla Sani, a distance of 38 miles. Upon reaching the latter station, the average drop in pressure is beween 20 and 30 pounds. The Mulla Sani station boosts the pressure to the original 600 pounds, driving the oil to the Kut Abdulla station, 32 miles away, where another boosting station sends it 35 miles distant to Dorquain, whence, by final pumping, it is driven to the tank farm at Bahmashir, near Abadan. Tankage is established at each pumping station to maintain average throughput in the event of a break or other trouble in the line above. Corrosion is held to a minimum by digging a channel in the earth around the pipe line, thus permitting the periodical rains to wash the salt from the soil about the pipe.

Refinery Reconstructed

The Anglo-Persian refinery at Abadan, one of the largest in the world, has been almost completely reconstructed within the past few years, and its various processes have been thoroughly modernized. A vast circulatory system is in operation at the plant, the continuous process being used.

In the last annual report to stockholders, covering 1928, the latest report available at the time of writing, Sir John Cadman, chairman of the board, said: "Considerable further progress has been made in adapting our principal refineries, both by improvement and expansion, to the heavier demands imposed on them by our growing marketing organizations, and by the need of keeping abreast of every new development in contemporary practice. A notable change has been effected in the distillation of the crude oil, which now involves a single, instead of a double, operation. The general modernization of the plant, in order to keep pace with current ideas, has also introduced greater elasticity into the whole process, thereby greatly facilitating the manufacture of a wider range of products. On the refining side, as distinct from the initial work of distillation, a considerable amount of development work has been done and methods of treatment have been improved and simplified, with a consequent reduction in operating costs. With the object of yet further increasing the flexibility of the refineries, a considerable addition will be made to the equipment for converting heavy oil to motor spirit by the cracking process."

Latest Records

Latest available production records for Anglo-Persian cover 1928. Taken from the annual report of the company, they follow:

Persia: There is nothing but good to report of the producing zone at Masjid-i-Sulieman. Production during the past year, estimated to exceed 5,000,000 tons, was 5,300,000 tons. It is still continuing to increase at the steady rate which has characterized operations for some years past. In the current 12 months (1929) the output should exceed 5,500,000 tons, but the potential annual output is, of course, very greatly in excess of this figure.

"As indicated last year," Sir John said, "drilling at Masjid-i-Suleiman has been confined to marginal tests. This drilling has been very successful in proving an important extension of the oil field. As an outcome of the continuous application of scientific methods to the examination of this field, I am able to state that its structural complexities have been so successfully studied that full reliance can now be placed upon calculations as to the magnitude of the oil reserves.

"The fields department continues to operate with a competence and precision of effort worthy of high praise. Masjid-i-Suleiman, although still the chief center of field activity in Persia, has now become a well balanced production center, with an ample supply of wells, and little further drilling remains to be done to complete the delimitation of the field. In future, the principal drilling, though still controlled from that center, will therefore take place on new areas under test or development.

"The scheme for recovering petrol originally in the crude, and hitherto carried away with the gas has recently come into full operation and is giving most satisfactory results.

"Few can readily realize the amount of effort, tireless and prolonged, which is necessary before a new oil structure can be discovered in zones most suitable for development. In a search during which no fewer than 19 acres were drilled, no marked success was obtained until recently. But I am happy to inform you that an area, which justifies a high measure of optimism, has now been found at Haft Kel, situated about 50 miles to the East of Ahwaz (the central station on our pipe line system) and about 55 miles south-southeast of Masjid-i-Suleiman. In April last the first well came into being with a production estimated at 800 tons daily, which is comparable with a typical well at Masjid-i-Suleiman. It has of course been closed in, and drilling is now proceeding to test the dimensions of the structure. This field will be linked to the pipe line at Kut Abdullah, a little south of Ahwaz. Its proximity to administrative centers at Masjid-i-Suleiman and Ahwaz, and the absence of engineering difficulty, will materially contribute to a co-ordinated and relatively inexpensive scheme of development. Haft Kel is 1,500 feet higher than Kut Abdullah, and on account of the gravity head, no expense for pumping plant is entailed.

Testing Other Areas

"Drilling on other test areas is progressing steadily, but results so far do not warrant any definite forecast. Surface evidence has often proved to be entirely misleading, and for this reason the

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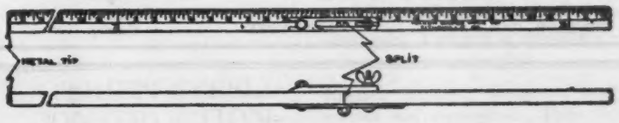

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most recent knowledge which geophysical science can provide has been brought into use. It may interest you to know that by creating a miniature earthquake with explosives, the earth tremors produced can be traced by seismic instruments, from the records of which the presence of oil deposits and their approximate depths can be determined. In course of time this scientific method is likely to play an increasingly important part in discovering the position of new fields.

"During the year an extension, from Iraq into Persian territory, of the Naft Khana oil-bearing zone, under concession to the company, has been definitely proved. This has introduced an element of complexity, since here is an oil field bisected by the frontier line of two nations, and governed by the terms of two separate agreements. It is hoped, however, that it will prove possible to find means of lessening the difficulties inseparable from a situation of this kind, and so, by evolving one administrative unit instead of two, secure the benefit of the most economical methods of operation.

Iraq

"In connection with the recent press announcement that the American group have now formally taken over their holding in the company which operates the Iraq petroleum concession, I should like to take this opportunity of saying that we welcome them warmly as collaborators with us and the other groups concerned in that great interprise. Its constituent groups are now five in number—four major groups, each holding 23¾ per cent of the share capital; and one other group holding 5 per cent. In order to facilitate the participation of American interests in the enterprise, the Anglo-Persian Oil Co. have given up half their former holding at cost price, and will receive as consideration 10 per cent of the production of crude oil free of cost.

"The Iraq company is now in position to build upon an exceptionally wide basis of technical and commercial experience. May I also add that I am full of hope that close intercourse between the representatives of so many important groups, meeting in one council chamber to forward the interests of a single enterprise whose well-being is of common concern to them all, will not be without its effect in promoting a spirit of amicable understanding throughout the yet wider sphere of the industry in which they meet competitively.

"Recent drilling in Iraq has met with decided success, but many of the wells are comparatively deep, gas pressures are high, and rapid drilling is not easy. Much remains to be done before the path is cleared for final schemes of development; but the future is bright with promise.

Albania

"Although drilling operations in Albania have been continuous throughout the year, they have been attended with little success. The quality of the small production hitherto obtained is by no means good, and the wells now being drilled have so far afforded no great reason for optimism. In the light of new data secured by the drill the whole of the geological evidence is undergoing re-examination, and in this examination we are fortunate in being able to collaborate with our Italian friends who are also drilling in the country.

Argentine

"Argentine production for the year was 123,000 tons, as against 150,000 in the preceding year. Our concession area in that country is not large and the geological conditions are obscure. As in the past, production was all sold in Argentine markets and realized satisfactory profits. Drilling for the maintenance of output is being carried out cheaply and efficiently, and it is a pleasure to record the competence with which the company's local management conducts operations."

LLANDARCY PLANT IS CONSTANTLY IMPROVED

(Continued from Page 126)

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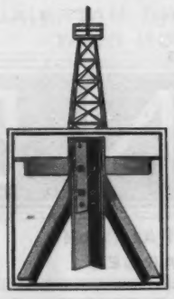

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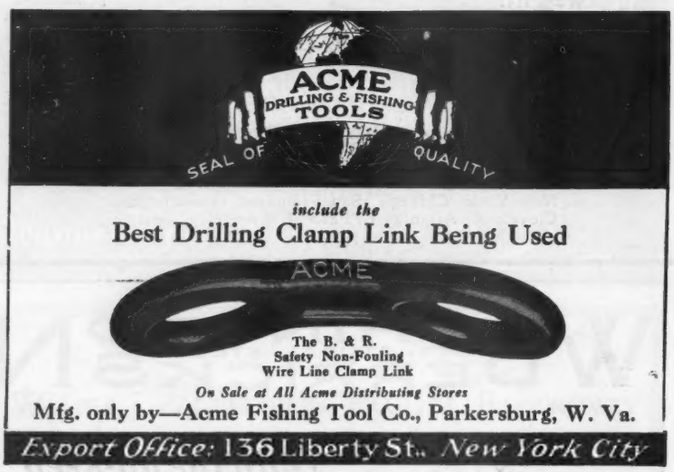

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GERMAN DEVELOPMENT IN REFINING IMPROVES

(Continued from page 154)

American. In 1926 the Russian Naphtha syndicate established its own distributing organization, the Derunaphtha, whose initial capital was 2,000,000 marks, shared equally by the Russian syndicate and the Berlin Soviet commercial delegation. Directly after organization, Derunaphtha closed a contract with the Hamburg oil firm of Julius Schindler G.m.b.H. for an annual delivery of 280,000 tons of lubricants for a period of three years. It also secured contracts with independent companies—notably the Benzol Cartel of Bochum—paying the latter a commission. As the Russian syndicate was handicapped by not having its own retailing organization, it formed the Derop in December, 1927. The share capital of the new company was taken by Derunaphtha and the Gallia Mineraloelprodukte-Vertriebs-Gesellschaft A. G., Vienna-Vaduz, which already had an efficient retail organization, the Erdoelindustrie A. G. of Berlin.

A price war involving all factors in the German market culminated in April, 1928, in a gasoline convention joined by virtually all competitors. Subsequently, the Derop extended its range of activity, increasing its branches from 9 at the beginning of 1928 to 21 at the middle of the current year. At its annual meeting July 1, 1929, Derop announced gross profits of 2,760,554 marks, but costs sufficient to result in a net loss for its first year of operation, ended December 31, 1928. This loss is explained by organization costs, including fusion of the Eriag (Erdoel Industrie A. G.) which occurred in 1928. The report disclosed that the Derunaphtha Co. bought out shares owned by the Gallia Co. in June, 1928, making the Derop Co. now 100 per cent Derunaphtha controlled.

Russia's Sales Policy

Soviet sales promotion in Germany is based on emphasizing the economic desirability for Germany of buying Russian oil, enabling the Soviet to purchase German manufactured goods. It is further explained that the Russian export oil sales policy is to sell through independent national firms like the benzol cartel in Germany and through state or semistate oil sales organizations like the Spanish oil monopoly, on long-term delivery contracts. Russian oil production, the Derunaphtha report states, will be doubled within the next five years—a circumstance that will result in increased exports to the German market.

Notwithstanding the steadily growing Russian competition, American oil companies operating in Germany have enjoyed a good business during 1929, this being particularly true with regard to lubricating oils.

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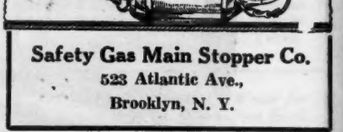

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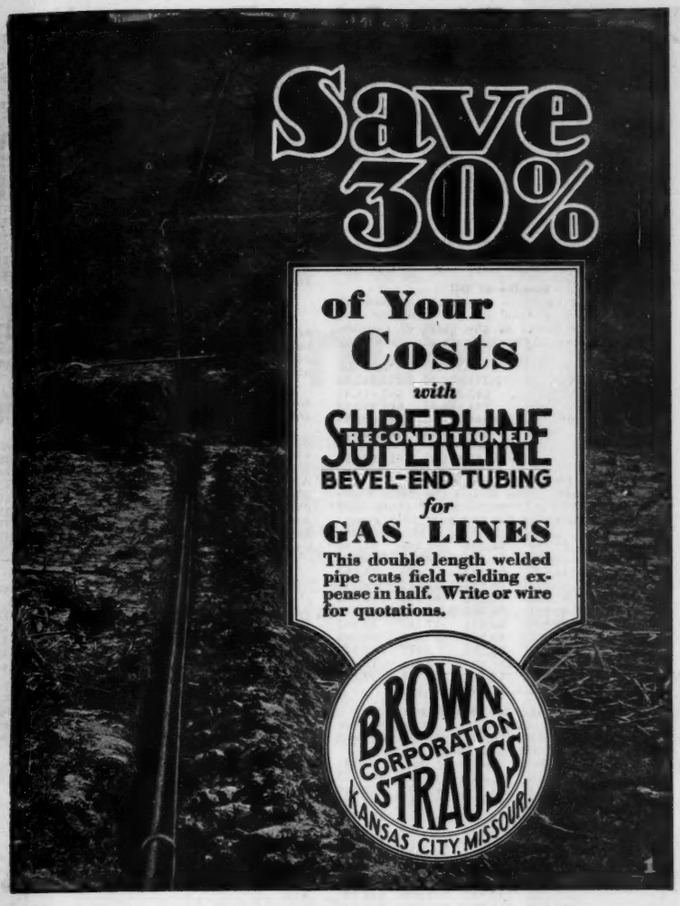

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE LINE STATEMENT FOR NOVEMBER, 1929

Runs

Company—	Month (bbls.)	Dy. av. (bbls.)
Prairie P. L. Co.*	4,620,000	154,000
Gulf P. L. Co.	1,748,375	58,279
Texas P. L. Co.	756,387	25,213
Magnolia P. L. Co.	1,630,495	54,350
Empire P. L. Co.	1,625,698	54,190
Cosden P. L. Co.	798,835	26,628
Sinclair P. L. Co.*	2,820,000	94,000
Oklahoma P. L. Co.	3,092,396	103,080
Other lines*	6,360,000	212,000
Total November	23,452,786	781,760
Total October	24,266,273	782,783
Difference	813,487	1,023

Shipments

Prairie P. L. Co.†	6,192,204	206,407
Gulf P. L. Co.	1,892,038	63,068
Texas P. L. Co.	1,277,071	42,569
Magnolia P. L. Co.	2,347,152	74,905
Empire P. L. Co.	1,441,860	48,062
Cosden P. L. Co.	859,728	28,657
Sinclair P. L. Co.†	3,458,090	115,270
Oklahoma P. L. Co.	3,228,946	107,632
Other lines*	6,210,000	207,000
Total November	26,807,089	893,570
Total October	27,633,003	891,388
Difference	825,914	2,182

Stocks

Prairie Oil & Gas Co.*	38,133,700
Gulf Pipe Line and Gypsy Oil Co.	10,057,895
The Texas Company	6,982,264
Magnolia Petroleum Co.	8,000,416
Empire Oil & Refining Co.	5,751,909
Mid-Continent Petroleum Corp.	3,600,903
Sinclair Crude Oil Pur. Co.	20,114,000
Oklahoma Pipe Line Co.	3,718,953
Carter Oil Co.	9,421,386
Other companies	25,574,000
Total November	131,355,426
Total October	133,042,778
Difference	1,687,352

*Estimated. †Prairie and Sinclair shipments include Texas oil.

EASTERN PIPE LINE REPORT FOR MONTH OF NOVEMBER

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct. '29	Nov. '29
Nat. Transit	404,122.07	426,302.38
S W Pa P L	94,485.54	82,952.71
Eureka P L	407,367.33	357,803.48
Buckeye P L (Macksburg)	368,647.98	334,853.69
Buckeye P L (Cleveland)	12,971.28	10,941.76
Buckeye P L (Lima, etc.)	111,929.62	94,141.89
Indiana P L	5,168.79	5,047.91
Cumberland P L	197,918.75	176,386.64
N Y Transit	32,746.64	31,674.21
Tide Water P L	.....	23,927.23
Pure Oil	290,221.77	296,627.99
Paragon Dev.	13,725.53	11,938.81
Stoll Oil Ref.	5,077.57	4,324.62
Bradford Trans.	414,513.56	387,990.83
Total	2,358,896.43	2,244,919.15
Daily average	76,093.43	74,830.64

Note—Paragon Refining Co. had other receipts of 193,678.88 bbls. Paragon Development had other receipts of 171.69 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct. '29	Nov. '29
Nat Transit	601,799.57	610,866.22
S W Pa P L	332,869.58	335,147.92
Eureka P L	228,566.66	241,823.95
Buckeye P L (Macksburg)	196,645.46	200,936.77
Buckeye P L (Cleveland)	2,185.51	1,694.86
Buckeye P L (Lima, etc.)	1,676,756.01	1,293,017.06
Indiana P L	1,425,999.12	1,380,193.50
Cumberland P L	178,996.97	185,762.53
Southern P L	64,066.81	63,391.67
N Y Transit	292,940.39	265,488.60
Northern P L	168,667.97	173,230.28
Tide Water P L	280,269.87	324,984.88
Pure Oil	290,992.65	307,123.47
Paragon Ref.	175,750.89	192,159.25
Paragon Dev.	15,869.35	12,438.47
Bradford Trans.	.....	494,038.59
Total	5,932,376.81	6,082,298.02
Daily avg.	191,366.99	202,743.27

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of October and November:

	Oct. '29	Nov. '29
Nat Transit	719,388.96	725,641.66
S W Pa P L	498,919.11	526,381.77
Eureka P L	1,398,117.80	1,397,286.60
Buckeye P L (Macksburg)	400,582.44	413,588.69
Buckeye P L (Cleveland)	48,885.71	74,272.48
Buckeye P L (Lima, etc.)	2,783,005.84	3,181,309.11
Indiana P L	747,719.04	716,629.97
Cumberland P L	562,259.60	552,617.51
Southern P L	339,742.96	308,180.03
N Y Transit	142,410.37	141,455.63
Northern P L	328,077.84	340,227.63
Tide Water P L	999,010.37	1,012,222.37
Pure Oil	20,118.60	20,999.86
Paragon Ref.	24,163.27	25,402.17
Indian Ref.	182,679.26	.....
Paragon Dev.	4,903.36	4,736.09
Tuscarora	265,678.11	267,510.68
Brad Trans.	65,438.84	159,975.37
Total	9,441,101.38	9,868,537.60
Decrease	1,965.57	.....
Increase	.....	427,436.22

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern Pipe Lines at the close of October and November showing gross stocks of the above fields:

	Oct. '29	Nov. '29
Pennsylvania	3,372,038.77	3,270,041.21
Lima	563,216.33	567,411.45
Kentucky	711,464.81	607,043.92
Mid-Continent	4,494,311.77	4,283,691.69
Illinois	299,569.70	283,720.25
Total	9,441,101.38	9,011,908.52

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1926	1927	1928	1929
Jan.	55,630	56,209	52,304	51,749
Feb.	60,394	61,298	57,002	51,833
Mar.	61,644	63,247	57,485	54,252
April	63,019	60,927	56,812	58,444
May	60,580	60,284	62,067	59,902
June	61,121	62,757	58,230	58,833
July	63,206	58,674	57,144	66,087
Aug.	61,815	60,870	57,745	66,687
Sept.	64,639	60,285	53,487	67,315
Oct.	161,132	147,080	58,100	76,092
Nov.	67,774	57,275	53,865	74,831
Dec.	68,755	53,089	52,025	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1926	1927	1928	1929
Jan.	156,056	141,227	146,465	165,721
Feb.	159,488	138,534	167,368	159,387
Mar.	150,239	133,777	158,883	161,474
April	152,374	140,227	172,935	169,737
May	160,998	144,594	180,559	184,281
June	160,267	149,772	188,024	185,404
July	160,045	151,850	189,470	194,763
Aug.	151,929	188,653	192,853	184,946
Sept.	158,915	144,213	194,138	201,214
Oct.	161,132	147,036	176,000	191,367
Nov.	172,608	150,975	176,898	202,743
Dec.	136,428	144,504	173,572	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1927	1928	1929
Jan.	9,718,008	12,276,710	7,596,564
Feb.	10,119,162	12,180,419	8,738,335
Mar.	10,794,044	12,239,725	9,002,058
April	11,112,295	11,740,125	8,978,172
May	11,359,381	11,602,468	8,903,560
June	11,493,673	11,287,678	8,921,275
July	11,458,128	10,819,331	9,211,595
Aug.	11,989,115	10,236,748	9,440,642
Sept.	12,212,716	9,660,910	9,443,067
Oct.	12,047,661	9,229,709	9,441,101
Nov.	11,933,740	8,366,553	9,868,538
Dec.	12,340,297	7,539,555	.....

Franklin Pipe Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and average reported above:

	Runs	Shipments	Stocks
1928—			
Nov.	2,663.53	788.47	19,426.99
Dec.	3,053.60	3,167.53	19,426.99
1929—			
Jan.	2,099.90	.....	19,313.06
Feb.	2,469.47	6,873.20	17,009.23
March	3,330.82	3,595.01	16,745.04
April	4,864.07	4,243.59	17,365.52
May	2,688.59	2,455.54	17,598.57
July	2,947.62	3,329.35	4,503.48
Aug.	2,742.73	2,889.47	4,356.74
Sept.	2,925.71	2,897.34	4,385.11
Oct.	3,083.59	1,754.94	5,713.76

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Dec. 1	2,408,755.23
Runs from wells	541,181.52
Other receipts	250,705.12
Regular deliveries	427,064.63
Other deliveries	402,397.36

The amount of Illinois oil run by the Tidewater Pipe Co. in November was 23,927.23 bbls. Deliveries were none. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

	Runs	Deliveries
1928—		
Dec.	584,633.00	491,517.26
1929—		
Jan.	570,727.38	545,084.66
Feb.	517,330.17	503,387.70
March	728,319.67	586,049.60
April	515,374.27	654,297.96
May	608,981.60	673,812.33
June	568,454.70	813,845.97
July	611,106.79	828,159.44
Aug.	625,351.99	746,425.06
Sept.	532,457.66	669,947.72
Oct.	622,302.83	558,558.68
Nov.	565,108.75	427,064.63

Tidewater Pipe Co., Ltd., also delivered in November, 72,323.52 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
February	14,214	.....	38,750	17,250	11,607	81,821	.....	.....	.....	.....	3,750	85,571
March	19,903	968	31,258	18,581	7,355	78,065	.....	.....	.....	.....	.....	78,065
April	16,667	.....	32,333	13,233	2,234	64,467	.....	.....	.....	.....	7,333	65,200
May	16,226	2,416	31,326	10,806	2,129	62,903	.....	.....	.....	.....	.....	62,903
June	14,866	3,167	23,100	10,300	6,100	57,533	.....	.....	.....	.....	.....	57,533
July	15,387	4,806	34,290	19,388	2,452	76,323	.....	.....	.....	.....	4,161	80,484
August	20,389	3,129	35,226	18,903	5,548	83,194	.....	.....	.....	.....	12,161	95,355
September	19,433	.....	31,334	11,900	6,200	69,367	.....	.....	.....	.....	4,800	74,167
October	9,065	4,677	42,065	12,000	9,677	77,484	.....	.....	.....	.....	4,097	81,581
November	18,900	3,167	41,667	14,699	3,767	82,200	.....	.....	.....	.....	2,400	84,600

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

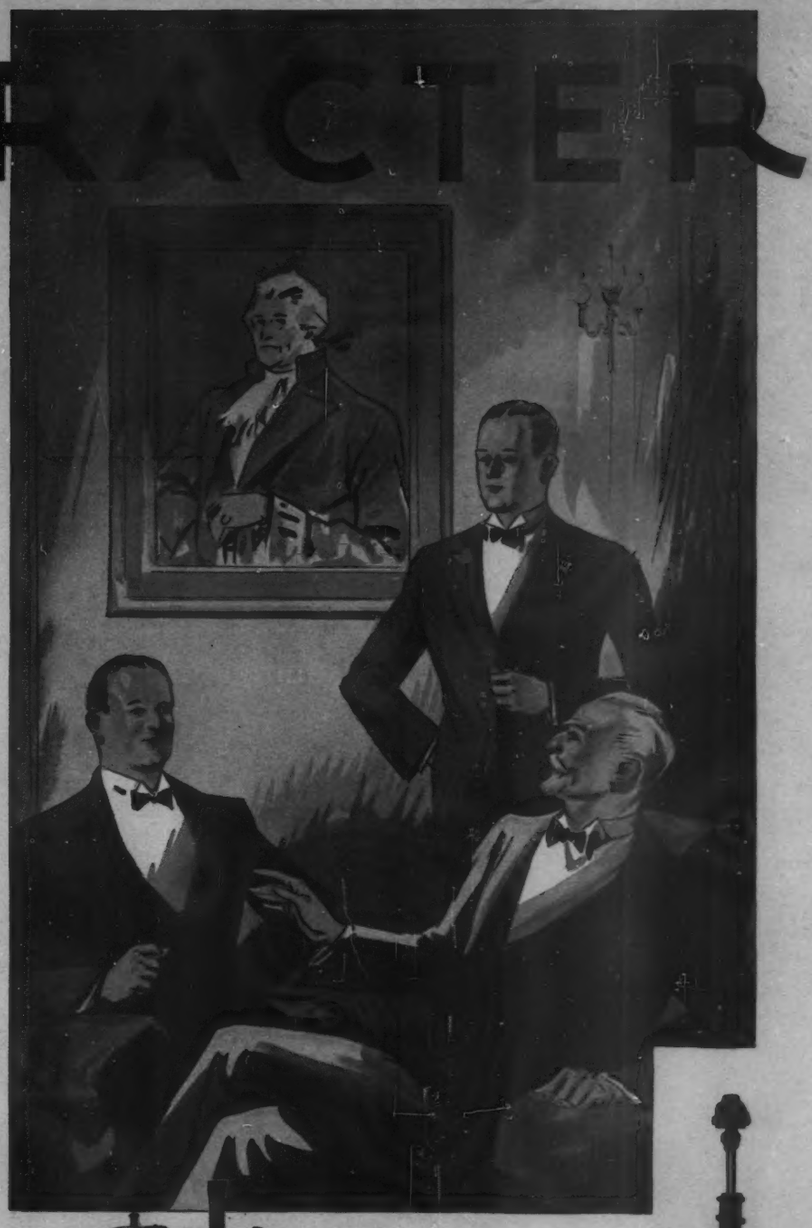
Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
February	13,750	15,071	135,179	32,750	17,892	214,643	.....	34,357	821	143	35,321	249,964
March	18,548	26,064	145,516	39,162	28,162	257,452	.....	42,581	2,322	.....	44,903	302,355
April	19,733	18,367	137,233	50,267	22,567	248,167	6,867	25,066	10,367	1,500	43,800	291,967
May	29,806	19,258	138,000	49,936	22,322	259,322	6,677	26,323	3,000	1,323	37,323	296,645
June	31,433	8,667	134,600	42,967	18,300	235,967	5,600	22,633	11,800	2,033	45,066	281,033
July	40,097	15,129	111,677	43,420	31,516	241,839	4,774	12,097	9,516	161	26,548	268,387
August	33,387	14,355	162,644	30,936	20,355	261,677	4,226	12,742	.....	1,484	18,452	280,129
September	32,967	9,000	136,633	54,300	32,900	265,800	6,900	22,900	5,367	1,333	36,500	302,300
October	39,936	10,519	137,096	38,160	38,644	264,355	6,613	13,388	11,064	4,419	35,484	299,839
November	23,633	18,900	125,200	41,100	28,200	237,033	2,233	12,533	6,667	2,500	23,933	260,966

GROSS PRODUCTION IN THE UNITED STATES FOR 12 MONTHS (REVISED)

(In Barrels of 42 gallons)

1928-29		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
November:	Month	19,907,526	22,078,630	20,791,798	2,977,800	2,476,080	1,801,914	2,388,870	3,348,000	75,770,668
	Daily average	663,584	735,956	693,059	99,260	82,536	60,064	79,629	111,600	2,505,639
December:	Month	21,574,703	22,425,722	22,180,102	2,938,400	2,521,571	1,846,841	2,289,040	3,581,000	79,407,379
	Daily average	695,958	723,410	715,487	96,400	81,341	59,576	73,840	115,516	2,561,528
January:	Month	23,385,939	22,575,874	23,412,226	2,861,641	2,453,526	1,807,887	2,076,070	3,439,000	82,012,163
	Daily average	754,385	728,254	755,233	92,311	79,146	58,318	66,970	110,936	2,645,554
February:	Month	22,300,707	20,464,164	20,816,209	2,557,968	2,154,194	1,569,930	1,965,655	3,113,000	74,941,223
	Daily average	796,454	730,863	743,484	91,356	76,936	56,068	70,202	111,184	2,676,473
March:	Month	24,324,729	20,838,262	24,858,593	2,951,076	2,303,724	1,756,153	2,195,823	3,586,000	82,314,359
	Daily average	784,669	672,202	785,761	95,196	74,314	56,650	70,833	115,677	2,655,302
April:	Month	23,295,060	20,235,290	23,493,097	3,112,740	2,258,580	1,702,479	2,085,030	3,524,000	79,636,376
	Daily average	776,502	674,513	783,102	103,758	72,956	56,750	69,501	117,467	2,654,546
May:	Month	24,053,351	21,345,453	24,489,101	3,665,099	2,200,158	1,713,261	2,252,522	3,879,000	83,617,945
	Daily average	775,915	688,563	789,965	118,229	71,618	55,267	72,662	125,129	2,697,353
June:	Month	24,624,627	20,561,112	24,698,029	3,636,150	2,112,270	1,699,581	2,180,752	3,887,000	83,399,531
	Daily average	820,821	685,371	823,267	121,205	70,337	56,653	72,692	129,567	2,779,984
July:	Month	26,796,627	22,371,925	26,969,389	3,867,157	2,137,047	1,716,488	2,360,836	4,439,200	90,659,730
	Daily average	864,407	721,675	869,997	124,747	68,937	55,370	76,156	143,200	2,924,489
August:	Month	27,233,353	22,429,492	27,490,489	3,816,555	2,086,083	1,764,973	2,478,016	4,340,000	91,633,961
	Daily average	878,495	723,532	886,787	123,115	67,293	56,934	79,936	140,000	2,956,092
September:	Month	26,104,264	21,402,390	25,987,102	3,780,690	1,959,720	1,718,250	2,346,480	4,200,000	87,498,896
	Daily average	870,142	713,413	866,236	126,023	65,324	57,275	78,234	140,000	2,916,647
October:	Month	26,895,160	20,821,646	26,412,167	3,429,468	2,000,027	1,956,326	2,392,952	4,482,600	88,390,346
	Daily average	867,586	671,666	852,004	110,628	64,517	63,107	77,192	144,000	2,851,300
	Total 12 months	290,496,046	257,550,010	291,098,901	39,644,744	26,613,080	21,054,033	27,012,047	45,813,600	999,287,511

CHARACTER runs in the family



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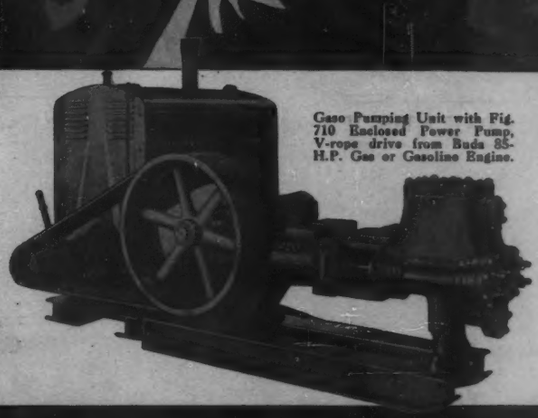
Gaso Piston Power Pump (Jerker Pattern) Figure 301

Gaso Fig. 1503 All Timken Bearing Duplex Power Pump.



Gaso Pumping Unit with Fig. 710 Enclosed Power Pump, V-rope drive from Buda 85-H.P. Gas or Gasoline Engine.

Gaso Walking Beam Pump Fig. 604, for Gas or Vacuum.

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. . . . takes this occasion to express its appreciation for the increased opportunities of service to the industry during the past year. ▼ ▼ ▼ ▼

. . . . The new year will be emphasized by an increased effort on the part of the Company to broaden the scope of its service thru the continued manufacture and distribution of tools capable of superior performance. ▼ ▼

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